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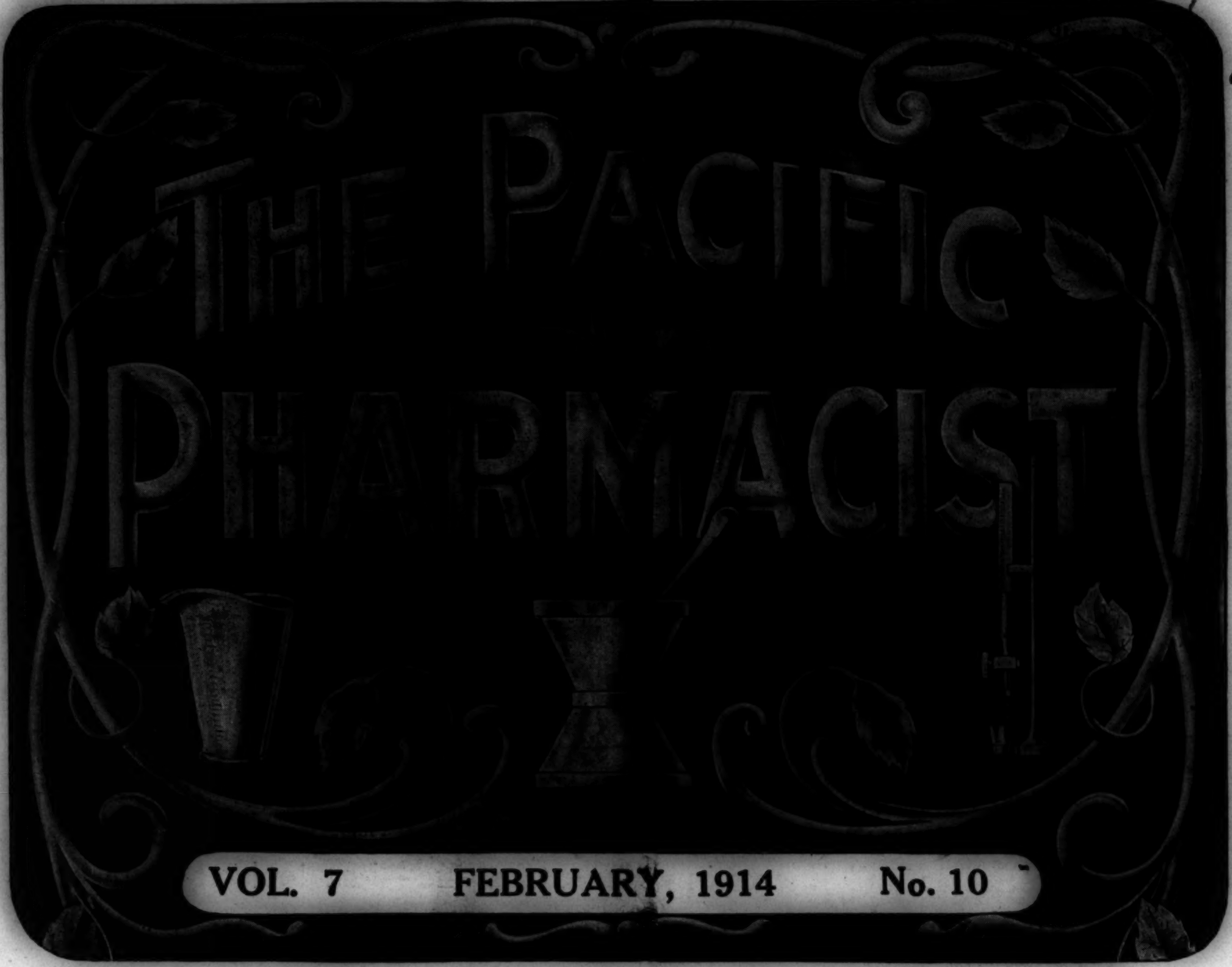

THE PACIFIC PHARMACIST

VOL. 7 FEBRUARY, 1914 No. 10

Published by GALEN PUBLISHING COMPANY

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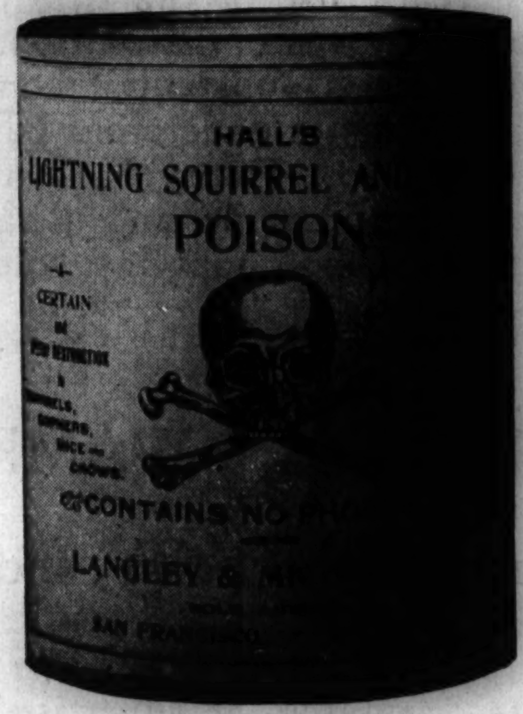

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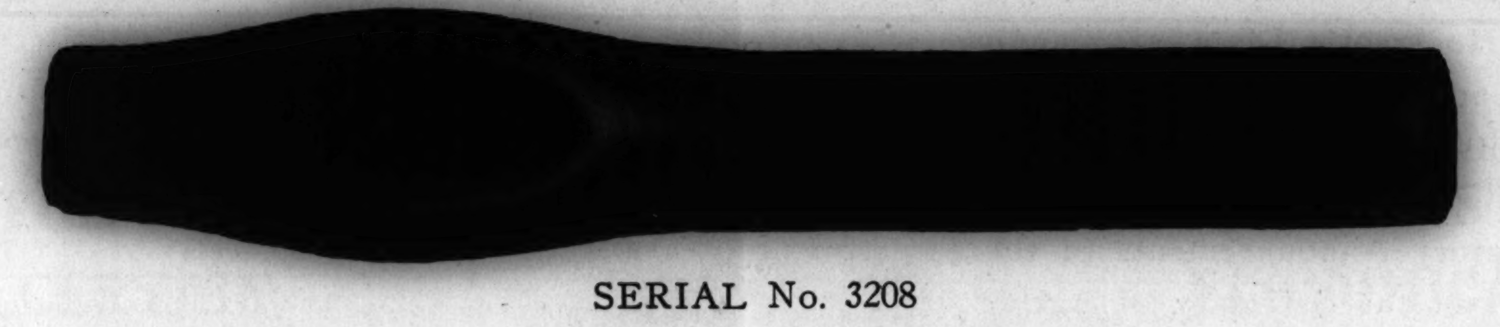

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No other company can offer you such service.

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Pacific Pharmacist

Official Organ of the Los Angeles Retail Druggists' Association
Official Organ of San Jose Retail Druggists' Association

Entered as second-class matter September 30, 1907, at the postoffice at San Francisco, California, under the Act of Congress of March 3, 1879.

Vol. 7. FEBRUARY, 1914. No. 10.

Published on the Fifteenth Day of Each Month by the GALEN PUBLISHING COMPANY on behalf of the Pharmacists and the interests of the Drug Trade.

ALBERT SCHNEIDER, Editor-in-Chief

Associate Editors:

F. W. SEARBY H. B. CAREY J. H. DAWSON R. E. WHITE

Address all communications and make all checks and money orders payable to Galen Publishing Co., 723 Pacific Bldg., San Francisco, California.

Communications on questions pertaining to Pharmacy and the Drug Business are solicited. The name of the writer should accompany every article, not necessarily for publication, but as a guarantee of good faith.

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EDITORIALS

REORGANIZATION OF THE BUREAU OF CHEMISTRY. There is to be a complete reorganization of the Bureau of Chemistry of the Department of Agriculture. The Board of Food and Drugs Inspection is to be abandoned. This is done in the interests of efficiency and economy. Matters which heretofore were referred to the Board for decision will now be submitted to Dr. Carl L. Alsberg, Chief of the Bureau; and Dr. Robert L. Emerson of Boston, Assistant Chief of the Bureau. The United States is to be divided into three divisions, Eastern, Central and Western, with a chief for each division. Each U. S. Food and Drug Laboratory will be in charge of a chief as heretofore. There is to be a concentration and centralization of laboratories. The smaller laboratories are to be abandoned, which will make it possible to do more efficient work in the centralized laboratories. A certain amount of research work is to be taken up in order that certain disputed points may be cleared up, and also in order that the methods now in use may be developed to greater usefulness and efficiency. As in the past, none but the best qualified men will be employed in the various laboratories.

The work in the laboratories will be divided into chemical, microscopical and bacteriological. Examinations have recently been held for positions as bacteriologists. The number of inspectors is to be increased and the inspectors will be in charge of the division chiefs, instead of the Chief Inspector at Washington, as heretofore. All of the changes are in the interests of better and greater efficiency. Under the new arrangement one of the centralized laboratories will be located at San Francisco, which, in fact, will be the chief laboratory of the Western Division.

JAMES G. STEELE. Mr. James G. Steele was one of the best known pharmacists of California. He was one of the old guard of which only a few are left. Mr. J. Winchell Forbes, in his recollections, says of Steele, that he was the first who spoke of founding a college of pharmacy in California. On his attention being called to this, Mr. Steele made no claim to the honor; but seemed satisfied to know that his name had been associated in the matter with the names of William M. Searby and William T. Wenzell.

Shortly before the unveiling of the tablet to the memory of W. M. Searby, Dr. Wenzell called on the writer in reference to the proposed celebration. Naturally some reference was made to the founders of the college, and with whom the idea originated of founding a college. In reference to this Dr. Wenzell said: "Ask Steele, he knows all about it, he is the only living man who does know about it, and whatever he says is correct."

Having this in mind it was thought advisable to urge Mr. Steele to put on record what he knew about the college, and after some hesitation he consented to do so, and this narrative gradually extended until, at the time of his death, he had completed an exhaustive history of the *California College of Pharmacy,* from its foundation to the present time. Of this history this is not the time nor the place to speak; when the book is published, as it is hoped it soon will be, the pharmacists of California can decide on its merits; but judging from the effect it produced on the minds of Val Schmidt, J. H. Dawson and the writer, to whom Mr. Steele, on two evenings, read the manuscript, it may be presumed that he has told well and good how, from small beginnings, there was builded up this great educational institution.

The writer once asked Mr. Steele how it was he was so well acquainted with the best works of the great authors. He said that through life he was fond of reading good literature and committing to memory the best passages from the best authors, and that as a boy he was known as always having a book in his hands. One naturally thinks of this when told of his death, how he had returned from a long walk and sitting down had taken a book in his hand to read; how when his wife spoke to him he made no reply, and thinking he was dozing how she had laid her hand on his shoulder to waken him and found that he was dead. Just as when he was a youth, the ruling passion strong in death, he still held a book in his hand.

Mr. Steele was well acquainted with most of the writers whose names are associated with what has been termed the golden age of California literature, the days of Bret Harte and of the old *Overland Monthly,* and his stories of these men and of these times were of much interest. Whether at a social gathering of musicians, writers or painters, or among his fellow pharmacists, he was equally at home; the same genial, wholesouled man. To him might be applied the lines from a dialect poem by James Whitcombe Riley:

"When God made Jim I bet you, He
didn't do anything else that day
But jes set around and feel good!"

R. E. White.

THIRD ANNUAL EDITION OF THE GRADUATE. Spring is the time of new things. New life, new hopes, new creations, all belong to that time of the year. The California College of Pharmacy is preparing an offering for the Altar of Spring. It is something new. This offering is in the shape of a book to appear early in the month of April, depicting the life, activities and organizations of its alma mater. All of our readers who are interested in the progress of modern pharmaceutical education should endeavor to secure a copy of this publication, for in it he will find not only data relating to the life at the college, but also articles which deal with the more advanced ideas in pharmaceutical and chemical fields. The object of this journal is to present to the reader a vivid picture of the life of the students, their work, their aims, their purposes.

The Alumni of this institution will surely be glad to secure a copy of The Graduate, for they will be glad to know of the progress of their alma mater. An outsider will welcome the publication as a means of becoming acquainted with an institution which stands for the best in pharmaceutical education.

We hope for the success of this issue and look forward in eager anticipation to its advent.

A copy of this publication may be obtained by writing to R. Artha Clarke, 1550 Page street, San Francisco, California. Price, $1.00.

R. A. C.

Food and Drug Laboratory for the Panama-Pacific Exposition. It is contemplated to establish a complete laboratory illustrating the work under the Pure Food and Drugs law. The laboratory is to be fully equipped and in full operation during the entire time that the Exposition is open, in charge of a laboratory chief and a corps of specialists in chemistry, bacteriology and microscopy. There will be displays showing the methods of food and drug adulteration and the means by which they are detected. It is also intended to give daily lectures and demonstrations germain to the subject. Fuller details will be given in an early issue of the PACIFIC PHARMACIST.

DESTRUCTION OF CONTRABAND OPIUM. The California State Board of Pharmacy continues its hunt after illicit opium and the destruction of such opium and of opium pipes and the accoutrements that go with the smoking of opium. We recently witnessed a spectacular destruction of opium and opium pipes by fire at a central point in the city of San Francisco. The California law requires that all smoking opium seized must be destroyed. Opium (illicit) other than smoking opium may be disposed of for manufacturing purposes. It is much to be regretted that smoking opium must be destroyed, as it seems a wanton waste. It is also a pity that the opium pipes are all destroyed. They would certainly make interesting exhibits in the numerous museums in the United States and elsewhere, and in private collections. It is only a question of a comparatively short time when these instruments will have passed out of existence. It would seem desirable to offer these confiscated pipes to such museums as might want them, charging therefor a reasonable price.

PHARMACEUTICAL LABORATORY NOTES. Beginning with this issue we will publish monthly notes of interest to the practical pharmacist under the caption "Pharmaceutical Laboratory Notes," conducted by Arthur Reum, who has had considerable experience in the manufacture of pharmaceutical preparations and who is at present engaged in the manufacturing department of the K. B. Bowerman pharmacies of San Francisco. We feel that these notes will prove of great value to our readers.

BILLS
FOR PHARMACISTS IN THE ARMY.

The American Pharmaceutical Association, with the assistance of the National Association of Retail Druggists and the National Association of Drug Clerks, is urging the passage of the Hughes-Bacon Bill (H. R. 1, S. 929), intended to promote the efficiency of the Hospital Corps of the United States Army.

The purpose of this bill is to remedy

as far as possible the conditions which made it difficult, if not impossible, to secure for the Army Hospital Corps the class of men necessary for the efficient performance of duties connected with the care of the sick and with sanitary science in general. The bill provides increased pay and establishes a higher rank of non-commissioned officers, thereby affording opportunity for promotion such as compares in a measure with the other staff corps of the Army.

Pharmacists throughout the country are urged to write to their Senators and Representatives, asking them to support this worthy measure. Act at once, as the time is short. Just a few lines asking your Senators and the Congressmen from your district to support House Bill No. 1 or Senate Bill No. 929, as the case may be, will be sufficient—*but do it now.* The list of the members of the military committee who now have the bill at their disposal is as follows:

Military Committee of the House.

James Hay, Virginia; S. Hubert Dent, Alabama; William J. Fields, Kentucky; Kenneth D. McKellar, Tennessee; William S. Howard, Georgia; Daniel J. Griffin, New York; Robert H. Cittins, New York; Warren Gard, Ohio; Frank T. O'Hair, Indiana; Frederick S. Deitrick, Massachusetts; Percy F. Quinn, Massachusetts; Daniel F. Garrett, Texas; Maurice Conolly, Iowa; William Gordon, Ohio; Julius Kahn, California; Daniel R. Anthony, Kansas; John C. McKenzie, Illinois; Frank L. Greene, Vermont; John M. Morin, Pennsylvania; Samuel B. Avis, West Virginia; Willis J. Hulings, Pennsylvania; James Wickersham, Alaska.

Military Committee of the Senate.

George F. Chamberlain, Oregon; Gilbert M. Hitchcock, Nebraska; Luke Lea, Tennessee; Duncan U. Fletcher, Florida; Henry L. Meyers, Montana; Charles S. Thomas, Colorado; James K. Vardaman, Mississippi; James P. Clarke, Arkansas; Henry A. Dupont, Delaware; Francis E. Warren, Wyoming; Joseph L. Bristow, Kansas; Thomas B. Catron, New Mexico; James H. Brady, Idaho; William S. Kenyon, Iowa; Nathan Goff, West Virginia.

We are especially anxious to have letters from their constituents reach these committeemen.

W. B. DAY,

Chairman Committee on Pharmacists in the Government Service.

LITTLE STOMACH.

Little stomach wakes up bright,
Feeling good—slept well all night.
Master sends his breakfast down—
Bacon, eggs, and coffee brown;
Little stomach goes to work
To digest without a shirk;
Breakfast scarcely finished when
Here comes lunch for two brave men.
Little stomach onward toils
Thro' the fricassee and broils,
Then, as if to get his goat,
Comes a dinner table d'hote;
Everything from soup to nuts;
Master is the king of Mutts;
Dinner measures two hours' long—
Twixt the courses wine and song;
Not the sparkling champagne drink,
But a wine a la red ink;
Little stomach knuckles down
To his task without a frown;
Works like fury there below
While good master sees a show.
Table d'hote is stowed away,
Little Stomach's earned his pay.
"Now I'll rest till morn," says he;
But, alas, that's not to be;
Just as he curls up to sleep
Comes a highball, broad and deep,
Crying: "Cheer up, Little Tum!
More to follow! Here I come."
Then the brothers Gin stand pat,
Tom and Gordon are their names:
Most illustrious are their frames;
Lobster salad is the next:
Little stomach is quite vexed.
Holy Smoke! Hang Haman high!
Splash—a quart of extra dry!
Little Stomach now is peeved,
Hurt, indignant, sorely grieved.
Joke's a joke when it's at par
But this joke has gone too far.
Little Stomach thus doth quote:
"By my sacred stomach oath,
I'll get even with this gink
For this too excessive drink."

(The Morning After.)

"Oh, my poor, dear, aching head!
Would to goodness I were dead.
Oh, so very sick am I,
Joy 'twould give me just to die;"
Little Stomach laughed with glee;
"Serves him right, Ho-ho! Tee-hee!"

—Canadian Druggist.

COMMUNICATIONS.

AN OUTLINE OF COURSES OF INSTRUCTION IN COLLEGES OF PHARMACY.

By ALBERT SCHNEIDER, M. D., Ph. D.

(Continued from page 256.)

PART TWO.

(Work of Second Year Continued.)

Among the possible adulterants are horseradish (simple, oval to elliptical starch granules, 5 microns to 15 microns, with very indistinct hili and lamellations); **A. fischeri,** (starch granules mostly simple and in twos and the aggregates of five to nine). Single granules somewhat larger than in **A. napellus** and some of the sclerenchyma cells considerably elongated; Japanese aconite (sclerenchyma cells wanting). Suspect other species and varieties of aconite, also the use of exhausted powder, crowns and other stem parts (fibrous tissue excessive and a few 2- to 5-celled trichomes). Suspect roots from other groups of plants.

2. BELLADONNA LEAVES—U. S. P. Leaves and stems inclusive of fruits and flowers of **Atropa belladonna.** L. Solanaceae.

No. 60. Non-characteristic feel. Somewhat hygroscopic.

Rather dull green to brownish green.

Somewhat fragrant; narcotic when moistened.

Somewhat bitter and slightly pungent.

Stomata on both surfaces of leaves; vertical walls of epidermal cells thin, wavy; comparatively few and rather large simple, 2- to 5-celled, thin-walled trichomes which are generally much broken in the powder. Calcium oxalate crystals (micro-crystalline) filling many of the leaf parenchyma cells; and single aggregate crystals. Glandular trichomes with one to many celled heads few and indistinct. The non-glandular trichomes though sparingly present, and the crystal bearing cells are the most characteristic structures.

Ash from 15 to 18%. Impurities should not exceed 10%.

Quite frequently adulterated. Suspect phytolacca leaves and stems (acicular crystals); scopola leaves and stems (histology closely similar); chestnut leaves (single-celled, curved, rigid trichomes); mallow leaves (stellate trichomes), and other foreign leaves and herbs.

3. BELLADONNA ROOT—U. S. P. The roots of **Atropa belladonna** L. Solanaceae.

No. 60. Dry, starchy or mealy feel. Light brownish gray.

Nearly odorless, slight soil odor, somewhat narcotic when moistened.

Sweetish, somewhat bitter and pungent.

Micro-crystalline calcium oxalate filling some of the parenchyma cells and abundant more or less spheroidal, simple to compound, starch granules, with distinct somewhat excentric hili; single granules 6 microns to 17 microns in diameter; polarizing bands increasing in clearness in direct ratio to size of granules. The minute pyramidal crystals (micro-crystalline) polarize well.

There should be comparatively little fibrous tissue (ducts, tracheids and wood fibers). There should be no true bast or sclerenchyma. Trichomes practically none and no acicular crystals.

Ash about 8%. Impurities should not exceed 5%.

Most common adulterants are phytolacca root (acicular crystals); scopola rhizomes (brown color and larger ducts); roots of allied genera; of white clover, old roots and crowns with stem parts (excessively fibrous). Roots gathered too early are deficient in starch.

4. CANNABIS INDICA—U. S. P. The pistillate flowering tops of **Cannabis sativa** L. Urticaceae.

Nos. 20 (flex.) and 40 (tinct.). Dry, somewhat resinous feel. Sticky and resinous to teeth on masticating.

Dull green to dull greenish brown.
Very heavy, narcotic.
Slightly pungent.

Epidermal tissue predominates. Vertical walls of lower epidermal cells wavy, of upper epidermis and of stems straight or nearly so; abundant, rigid, curved, tapering pointed, single-celled trichomes with basal cystoliths, varying from very short to comparatively long; resin particles are abundant; vascular tissue not very abundant and non-characteristic; multi-cellular glandular trichomes (gland 8-16 celled), also some simple glandular trichomes. Numerous very small aggregate crystals. Seed tissue present in more or less abundance (sclerenchyma, endosperm tissue rich in oil and proteid granules). American and Indian hemps are structurally identical. Effervescence with dilute HCI.

Ash 10 to 20%. Impurities (including seeds) should not exceed 10%.

Seed often excessive (should not exceed 5%). Staminate tops may be added (pollen grains). Exhausted material (deficient in resin, more brown in color) may be used. Excess of stems may be suspected.

5. COLCHICUM CORM—U. S. P. The corms of **Colchicum autumnale** L. Liliaceae.

Nos. 60 (flex.) and 30 (tinct.). Dry, starchy or mealy feel.
Grayish light brown.
Odorless.
Sweetish, bitter, pungent.

Large, thin-walled parenchyma cells filled with starch. Vascular tissue (spiral ducts) sparingly present. Some thick-walled porous parenchyma. Trace of suberized tissue. Starch granules single, two- and three-compound, less commonly four-compound; 7 microns to 21 microns; hili very prominent, centric, radiately fissured; cross bands marked, right angled but becoming indistinct centrally because of the large fissured hili.

Reddish yellow with concentrated sulphuric acid.

Ash about 3%. Impurities must not exceed 5%.

On account of the characteristic starch granules, adulterations are quite readily detected. None or only a small amount of the starch should be pasty (use of heat to aid drying).

6. COLCHICUM SEED—U. S. P.

No. 30. Hard, granular feel. Seeds very hard and not easily reduced to powder.
Light brown to brown color.
Odorless.
Bitter, somewhat pungent.

Rather large endosperm cells with greatly thickened large-porous walls, with granular contents, composed of some starch granules, abundant proteid granules and oil globules. Brown epidermal cells present. Starch granules sparingly present, 2 microns to 6 microns; cross bands quite distinct, right angled.

Ash about 3%. Impurities must not exceed 5%.

Adulterations easily detected. There should be no trichomes, bast cells or sclerenchyma cells.

7. CURCUMA (Turmeric). The Rhizomes of **Curcuma longa** L. Scitamineae.

Usually a fine powder. Dry feel.
Bright orange yellow which disappears in the presence of alkalies.
Aromatic but not strongly so, recalling ginger.
Pungent, somewhat bitter.

Typical parenchyma cells filled with the agglutinated pasty starch granules (due to placing in boiling hot water preparatory to drying), forming masses equal in size to lumen of cells. A few unchanged starch granules; simple, irregularly ovoid with the small hilum (a mere dot) at the extreme tip of the abruptly narrowing end; 30 microns to 40 microns; lamellation distinct, polarizing bands rather indistinct. A few simple trichomes may be found. Yellow color prevails throughout.

Ash 8%. Impurities should not exceed 5%.

Not generally adulterated but very much used as an adulterant (in ground mustard, prepared mustard, etc.), and as a coloring substance. An ingredient in curry powders, also forming at well-known test reagent in chemical laboratories.

8. JALAPA—U. S. P. The tuberous roots of **Ipomoea purga** Hayne, Convolvulaceae.
No. 60. Dry feel, resinous on warming.
Light grayish brown.
Smoky (faint creosote) odor due to method of drying tubers over open flame.
Sweetish, pungent.

Considerable brown suberized tissue. Small-celled outer parenchyma with numerous aggregate crystals. The inner parenchyma typical, large-celled, filled with starch and resin. Fragments of large and smaller porous ducts and laticiferous ducts. Resin globules and fragments of resin bearing cells. Starch granules simple and compound (mostly twos). Fourteen microns to 40 microns, and some aggregates, also some pasty starch; hili quite distinct in the larger granules and slightly excentric; cross bands right angled and remarkably distinct, showing complete rotation on turning the analyzer.

Ash 5%. Impurities should not exceed 5%.

Among the likely adulterants are starches and flour, roots and rootlets of the same species (excess of fibrous tissue); tubers and roots of related species; sand and dirt.

9. OPIUM—U. S. P.—The dried juice of **Papaver somniferum** L. Papaveraceae.
No. 40. Rather granular feel, becoming somewhat sticky on warming and brisk rubbing.
Nearly chocolate brown.
Heavy, narcotic. The type of narcotic odors.
Bitter.

Contains fragments of poppy leaves, epidermal tissue of pods and usually some starch (added by collectors); besides such impurities as dirt, sand and the spores and hyphae of fungi.

Ash 5 to 6%. Impurities must not exceed 15%.

Chinese smoking opium is a very dark, homogeneous, sticky to brittle (according to age) mass, which always shows abundant prismatic crystals which can readily be seen under the low power (No. 2 ocular with No. 3 objective) of the compound microscope. Similar crystals may be found in Persian raw opium.

To test for opium (morphine), make a cold acidulated aqueous extract of the suspected substance (such as pills, powders, tablets, etc.), or take a small quantity (several drachms) of the substance if in liquid form, filter, slowly boil down (½ to 1 drachm) to nearly dryness (using a porcelain evaporating dish), with constant stirring. When cool apply a drop of formaldehyde solution (40%) followed by a drop of concentrated sulphuric acid. If opium (morphine) is present a permanganate purple color is soon developed which gradually changes to very dark. (Sugar and gums interfere with this test somewhat). Examine a bit of the boiled extract under the compound microscope and look for the crystals like those in smoking opium.

Among the possible adulterants of raw opium are excess of poppy leaves and pods, excess of starch, sand and dirt. Mold and other fungi are frequently present. (A standard of moisture percentage for gum opium should be adopted).

10. PYRETHRUM INSECT POWDER. The partially expanded flower heads of Pyrethrum species. Compositae.
Fine powder. Non-characteristic feel.
Yellowish brown.
Somewhat aromatic.
Somewhat pungent.

P. roseum, P. carneum, and **P. cinerariaefolium** are the principal species used. The histology of the three species named is closely similar. Vascular tissue, parenchymatous tissue, T-shaped trichomes (basal cells usually broken and removed, leaving the tapering pointed end cell plainly to be seen). The pollen grains (spherical with incompletely developed conical projections on extine) should be abundantly present, though mostly immature. Some typical sclerenchyma cells present (from torus); also aggregate crystals. A good quality of insect powder should show on an average at least thirty immature pollen grains in the field of the compound microscope (high power—No. 2 oc. and No. 7 obj.). (No. 80 Po.).

Ash 6 to 7%. Impurities (inclusive of pyrethrum stems) should not exceed 15%.

Very commonly adulterated. Most common adulterants are pyrethrum stems (excess of fibrous tissue and pollen grains few or none); also suspect old flower heads (few mature pollen grains, abundant seed tissue, sclerenchyma cells excessive); flower heads of related species, of calendula, of chamomile, etc.; sawdust, curcuma, mustard hulls, flour, corn meal, etc. A standard based upon the number of pollen grains present should be adopted. An insect powder showing less than an average of 15 immature pollen grains to the field (high power) of the compound miscroscope should be rejected.

PHARMACEUTICAL BACTERIOLOGY.

A course of from fifteen to eighteen lectures, recitations and quizzes covering the following subjects:

PHARMACEUTICAL BACTERIOLOGY.

- General Introduction.
  - Relationship of pharmaceutical bacteriology to medical bacteriology, to general bacteriology. Reasons why pharmacists should study bacteriology.
- Historical
  - Introduction
    - Period I. From Hippocrates (500 B. C.) to Leeuwenhoek (1656).
    - Period II. From Leeuwenhoek (1656) to Schwann (1837).
    - Period III. From Schwann (1837) to Pasteur (1862).
    - Period IV. From Pasteur (1862) to Behring (1890).
    - Period V. From Behring (1890) to Wright (1907).
- General Morphology.
  - Size and Form
  - The cell.
    - Cell-wall
    - Plasmic contents.
    - Cilia
    - Spores
    - Other cell-contents.
- General Physiology.
  - Multiplication.
    - Simple division.
    - Spore formation.
  - Behavior to
    - Temperature.
      - Thermophilous.
      - Mesophilous.
      - Psychrophilous.
    - Light.
    - Moisture. Etc.
  - Products.
    - Ptomaines.
    - Toxins. (Auto-intoxication.)
    - Indol, skatol.
    - Phenol.
    - Leucin, tyrosin.
    - Coloring Substances.
    - Iron.
    - Sulphur.
    - Acids.
    - Light.
    - Warmth.
    - Gases.
  - Age of bacteria.
  - Rate of Division.
  - Enzymes.
- Bacterial Activities.
  - Decomposition—Rotting. Decay of Plants and Animals. Soil formation.
  - Decomposition Products.
  - Pathogenic.
  - Zymogenic.
  - Soil fertilizing bacteria.
  - Symbiotic.
  - Parasitic—Obligative. Facultative.
  - Saprophytic—Facultative and Obligative.
  - Aerobic—Obligative and Facultative.
  - Anaerobic—Facultative andObligative.
- Classification of Bacteria—Genesis.
  - Relationship of bacteria to fungi, algae.
  - Spontaneous Generation.
  - Classification according to form.
  - Classification according to occurrence (Soil, air, water).
  - Useful, Indifferent and Harmful.
  - Scientific classification. Based upon what?
  - (Migula's Classification.)
- Range and Distribution.
  - Altitudinal.
  - Latitudinal.
  - Soil and Air.
  - In Foods.
  - In Drinks.
  - In clothing.
  - In intestinal tract.
  - In respiratory tract.
  - Inter-cellular—Plants and Animals.

- Intra-cellular—Plants and Animals.
- In the Blood Circulation.
- In Sewage.
- In Streams, rivers, lakes, etc.

- Study of Bacteria.
  - Direct Examination.
  - Culturing. Culture Media.
  - Isolating bacteria.
  - Bacterial Counts. In solids and semi-liquids, liquids.
  - Plate cultures.
  - Test tube cultures.
  - Culturing anaerobic forms.
  - Staining.
    - Object of staining.
    - Stain Behaviors.
    - Single stain.
      - Stock solutions.
      - Mordants.
      - Decolorizing.
    - Double or contrast stain.
    - Spore staining.
    - Flagellar staining.
- Bacteria in the Industries.
  - Function of bacteria in Agriculture.
  - Bacteria in the Dairying Industry.
    - Ripening of Cream.
    - Ripening of Cheese.
  - Bacteria in the Tanning Industry.
  - Cider Making.
  - Bacterial Pest Exterminators.
  - Flavoring Bacteria.
    - Tobacco—Wines, Beer, Etc.
  - Rotting Bacteria vs. Pathogenic bacteria in Sewage.
  - Rotting Bacteria in paper manufacture.
  - Bacterial Tablets.
    - Lactone tablets.
    - Yoghurt tablets.
    - Bacillary tablets.
- Immunity vs. susceptibility to disease.
  - Kinds.
    - Individual or autogenetic.
    - Species and varieties.
    - Genera.
    - Family and racial.
  - Specific immunizing agents.
    - Phagocytes. Leucocytes.
    - Leucocytosis. Phagocytosis.
    - Lysins.
      - Hemolysins.
      - Cytolysins.
      - Bacterolysins.
    - Opsonins. Opsonic Index.
    - Antitoxins—Anti-bodies.
  - Ehrlich's side-chain theory to explain immunity.
- General Immunizing Factors.
  - Age.
  - Sex.
  - Heredity.
    - Phylogenetic.
    - Autogenetic.
  - Environment.
    - Climate.
    - Altitude.
    - Seasons.
    - Bad Food.
    - Bad Water.
    - Poisons—Preservatives.
    - Occupation
    - Injuries.
  - Habits.
    - Alcoholic.
    - Tobacco.
    - Drugs.
    - Narcotics.
    - Coffee and Tea.
    - Overeating.
    - Starving.
    - Incomplete Diet.
- Social and Political Immunizing Factors.
  - Intermarriage.
  - Regulation of marriage.
  - Crowded Habitations.
    - Cities and Towns.
    - Tenements, flats, apartment houses and hotels.
    - Public Conveyances.
  - Dress.
  - Quarantine.
    - Communal.
    - State.
    - National.
  - Preventive Medicine.
    - Individual Sanitation.
    - Sanitary Homes.
    - Rules of Health.
    - Diet.
    - Exercise, Etc.

FERMENTATION.

- What Is Fermentation?
- Historical—Earliest observations.
  - Chemists **vs.** biologists.
- Processes related to fermentation.
  - Hormones.
  - Pangenes—Pangenesis.
  - Certain chemical reactions.
- Organic **vs.** inorganic ferments.
- Finely divided metals.
- Colloidal metals—Sols.
- Properties of ferments.
  - Chemical composition.
  - Physical properties.
  - Behavior to temperatures.
  - Behavior to poisons.
  - Reversibility of the process.
  - Incompleteness of process.
  - Proferments—Zymogens.
  - Antiferments.

CLASSIFICATION OF FERMENTS.

A. Hydrolytic Ferments.

I. Proteid Ferments.

1. Proteolytic ferments. Proteases.
   - a. Pepsin.
   - b. Trypsin.

- c. Lysins (?)
  - Bacterolysin.
  - Hemolysin.
  - Cytolysin.
- d. Opsonins.
- e. Papain.
- f. Of ductless glands.
- g. Of insectivorous plants.
- h. Of cryptogamous plants.
- i. Seed ferments.

- 2. Coagulating ferments.
  - a. Rennet.
  - b. Vegetable rennet.
  - c. Agglutinins (?)
  - d. Precipitins (?)
  - e. Fibrin ferment.
  - f. Pectose

- 3. Starch Splitting Ferments.
  - a. Diastases (amylases).
    - Amylase.
    - Ptyalin.
    - Amylopsin.
    - Glycogenic ferment.
    - Of fever, blood, and urine.
  - b. Disacharide (diastase) ferments.
    - Maltase.
      - Of yeast.
      - Of other cryptogams.
      - Of Animals.
    - Invertase.
      - Of yeast.
      - Of other cryptogams.
      - Of animals.
    - Trehalase.
    - Melicitase.
    - Melibiase.
    - Lactase.
  - c. Polysacharide (diastase) ferments.
    - Cellulose or Cytase.
    - Inulase.
    - Pectinase.
    - Seminase.
    - Carubinase.

- 4. Glucoside Splitting Ferments.
  - a. Emulsin.
  - b. Myrosin.
  - c. Gaultherase.
  - d. Rhamnase.

- 5. Fat Splitting Ferment. Lipases (Steapsin).

- 6. Ammonia Forming Ferments. Urease.

- 7. Lactic Acid Forming Ferments.

- B. The Oxidizing Ferments.
  - 1. Zymases.
  - 2. Oxydases.
  - 3. Acid Forming Ferments.
    - a. Vinegar (Acetic acid).
    - b. Oxalic acid.
    - c. Citric acid.
    - d. Malic acid, etc.

THE MANUFACTURE AND USE OF THERAPEUTIC BACTERIAL PRODUCTS AND SERA.

For Human Use.

- Sera.
  - Antidiphtheric serum.
    - Selecting and testing the horse.
    - Preparing the toxin of diphtheria.
    - Inoculating the horse with the toxin.
    - Bleeding the horse.
    - Securing the antitoxic serum.
    - Standardizing the serum.
  - Concentrated Diphtheric Antitoxin.
    - Material used.
    - Precipitating out the globulins.
    - Washing and diluting the globulins.
    - Standardizing.
  - Antitetanic Serum—Method of manufacture and use.
  - Antibacterial Sera or Bactericidal Sera.
  - Antipneumococcic Serum.
  - Antimeningococcic Serum.
  - Antiplague Serum (Yersin's Serum).
  - Antistreptococcic Serum.
  - Antityphoid Serum.
  - Antidysenteric Serum.
  - Antigonorrheal Serum.
  - Antianthrox Serum.
  - Scarlet Fever Serum.
  - Antituberculous Serum.
- Modified Toxins.
  - Smallpox vaccine.
    - Selecting and testing the animal—heifer.
    - Inoculating animal.
    - Removing Scab.
    - Ageing and testing.
    - Preparing for market.
      - Ivory Points.
      - Glycerinated tubes.
      - Dry form.
    - Use of vaccine.
  - Hydrophobia vaccine.
    - Inoculating rabbits. Virus fixe.
    - Removing spinal cord.
    - Grading the toxicity.
    - Method of using the toxin.
  - Erysipelas and Prodigiosus vaccine.
  - Antivenine (Snake toxin).
  - Friedmann's Tuberculosis Remedy.

Veterinary Use.

- Antitoxic Sera or Antitoxins.
  - Antitetanic Serum.
  - Influenza Serum (intravenous use).
- Antibacterial Sera or Bactericidal Sera.
  - Antistreptococcic Serum.
  - Canine distemper serum.
  - White scour serum.
  - Bacterins.
  - Anthrax.
- Bacterins or opsonogens (vaccines).
  - Homologous. Autogenous.
  - Heterogeneous. Mixed.

- Mode of Preparation. Standardizing.
- Staphylococcus. Single or Mixed.
  - S. pyogenes albus.
  - S. pyogenes aureus.
  - S. pyogenes citreus.
- Streptococcus.
- Gonococcus.
- Typhoid bacillus.
- Colon bacillus.
- Neoformans bacillus.
- Pyocyaneous bacillus.
- Bubonic plague bacillus (Haffkine's plague vaccine).
- Tuberculins.
  - Old tuberculin (T. O.).
  - Tuberculin residium (T. R.).
  - Tuberculin precipitate (T. P.).
  - Bacillus emulsion (B. E.).
  - Bacillus filtrate (B. F.).

Phylacogens. Mixed Toxi-vaccines.
- Pure and Mixed.
- Pneumonia.
- Rheumatism.
- Tuberculosis. Etc.
- Mallein.
- Tuberculin.
- Blacklegine.
- Hog cholera.
- Fowl cholera.
- White scour.
- Texas fever.

Yeasts and molds.
- Phycomycetes.
- Ascomycetes.
  - Saccharomycetes.
  - Gymnoascomycetes.
- Organisms concerned in beer making.
- Organisms concerned in sake making.
- Organisms in vinous fermentation.
- Organisms in bread making.
- Yeast cake. Manufacture.
- Soya sauce.
- Arrak.
- Pathogenic Yeasts and Molds.
- Study of Yeasts and Molds.
- Counting Yeasts and Molds in foods.

Protozoa in Disease.
- Rhizopoda.
- Flagellata.
- Sporozoa.
- Intestinal disorders.
- Fevers—Relapsing fevers. African tick fever.
- Syphilis spirillum.
- Sleeping sickness.
- Malarial plasmodium.

DISINFECTANTS AND DISINFECTION.

Definitions. Disinfectant. Germicide. Antiseptic. Aseptic. Insecticide. Preservative. Dips.

Standardization of Disinfectants.
- Rideal-Walker method. Lancet Method.
- Anderson-McClintic method. Phenol coefficient.
- "Silk thread method."
- "Glass rod method."
- "Platinum loop method."
- "Spoon method."
- Albumen coagulating coefficient (Schneider method).
- Toxic coefficient (Anderson method).

Conditions Modifying the Activity of Disinfectants.
- Warmth and heat.
- Moisture with gaseous disinfectants.
- Time of Exposure.
- Electric Dissociation.
- Composition of material to be acted upon.
- Strength of solution.

Physical and Mechanical Disinfectants.
- Cleanliness.
- Pure air.
- Heat.
- Cold.
- Agitation.
- Sedimentation and Filtration.

How Disinfectants Kill.
- Interfering with nutrition.
- Oxidation.
- Albumen coagulation.
- Ionization.
- Light.
- Electricity.

Chemical Disinfectants.
- Gaseous or Vaporous.
  - Formaldehyde.
  - Sulphurous acid gas.
- Phenol—Carbolic Acid.
- Liquor Cresolis Compositus.
- Lysol, Cresol, Creolin.
- Izal. Chloro-Naphtholium. Etc.
- Tricresol.
- Formaldehyde.
- Bichloride of Mercury.
- Chlorinated Lime.
- Lime.
- Milk of Lime.
- Copper Sulphate.
- Iron Sulphate.
- Permanganate of Potassium.
- Iodoform—Aristol—Europhen.
  - Iodol. Lusophen. Nosophen.
- Boric acid and borax.
- Creosote.
- Hydrogen dioxide.

Intestinal Antiseptics—Antipyrin. Acetanilid—Phenacetin. Phenacol. Betol. Naphthol. Naphthalin. Quinine. Salicylic acid. Salol. Salophen. Guaiacol. Resorcin.

So-called Respiratory Antiseptics. Aromatic oils. Menthol. Camphor. Euthymol. Campho-phenique.

- Fake Antiseptics. Fraudulent claims of disinfecting power.
  - "Radam's Microbe Killer."
  - "Electric Germ Destroyer."
- Classification of Disinfectants according to relative activity.
  - Very Active—Example Mercuric chlorid.
  - Active—Ex. copper sulphate.
  - Fair—Carbolic acid, etc.
  - Indifferent—Boric acid, etc.
  - Feeble—Borax, etc.
  - Very feeble—Salt, etc.
- Standardization the only reliable guide to the value of disinfectants.
- Toxicity of Disinfectants.
- Comparative cost of disinfectants.
- Procedures for Disinfection.
  - Surgical Disinfection.
  - Disinfection of Excreta.
  - Sick Room Disinfection.
  - Disinfection of Patient.
  - Disinfection of Public Buildings.
  - Disinfection of Public Conveyances.
- Purification and Sterilization of Water Supplies.
  - U. S. Public Health Service.
  - State Boards of Health.
  - City Health Boards.
- Sewage Disposal.
- Contamination of Water Supplies.
- Food Preservatives.
  - Historical.
  - Arguments against the use of food preservatives.
  - Arguments for the use of food preservatives.
- More common preservatives used.
  - Salt, sugar, smoking, heat, cold.
  - Borax. Boric Acid.
  - Salicylic acid.
  - Benzoic acid. Sodium benzoate.
  - Pyroligneous acid.
  - Sulphurous acid. Sulphites.
  - Copper sulphate.
  - Sodium carbonate. Calcium carbonate.
  - Saccharin. Sucrol. Dulcin.
  - Peroxide of hydrogen.
  - Formalin.
  - Saltpeter. Alum.
- Insecticides and Other Pest Exterminators.
  - Powders.
    - Lime.
    - Sulphur.
    - Paris Green. Arsenicals.
  - Gases.
    - Carbon bisulphide.
    - Hydrocyanic acid gas.
  - Sprays and Washes. Bordeaux Mixture.

STERILIZATION AND DISINFECTION IN THE PHARMACY.

- Introduction.
- Sterilization temperatures. 60° C. 100° C. 120° C. Use of substances having different boiling points.
- Medicines which do not require sterilization.
- Medicines requiring sterilization.
- Methods of Sterilization.
  - Sterilization of containers.
  - Sterilization of glassware.
  - Sterilization of apparatus.
  - Sterilization of stoppers.
  - Sterilization of surgical supplies.
  - Sterilization of medicines.
- Preparation of Ampuls. Value of Ampuls.

COMMUNICABLE DISEASES AND SUGGESTIONS ON PREVENTIVE MEDICINE.

(Lantern Slides.)

- Introduction.
  - Preventive medicine.
  - The pharmacist in preventive medicine.
  - The pharmacist as health officer.
- Communicable Diseases.
  - Primary Causes.
  - Secondary Causes.
  - Tuberculosis.
  - Typhoid fever.
  - Pneumonia.
  - Smallpox.
  - Malaria.
  - Diphtheria.
  - Cancer.
  - Plague.
  - Asiatic Cholera.
  - Yellow Fever.
  - Pellagra.
  - Hookworm.
  - Syphilis.
  - Gonorrhea.

BACTERIOLOGICAL AND MICROSCOPICAL LABORATORY FOR THE PHARMACIST.

(See also Third Year Bacteriology.)

- Size and Location.
- Equipment and Furnishings.
- Micro-analytical Work.
- Bacteriological Work.

Second Year Laboratory Work in Bacteriology.

A course of six laboratory periods of two hours each intended to serve as an introduction to a study of the morphology of bacteria, spore formation, motility, use of bacterial stains, including a study of some commercial products of bacterial origin and of a few types of bacteria, yeasts, moulds, etc.

1. **Root Nodule Bacteria.**—Because of the abundance of available leguminous root nodules and the size of the organisms found in these nodules,

the Rhizobia serve as excellent material for the beginner in the study of bacterial life. The species **Rhizobium mutabile** also serves to illustrate polymorphism or pleomorphism. The root nodules of the following plants are studied, giving attention to the form and abundance of the nodules, the histology of the nodules, showing the infectidorea, the Infeckionsföden (Infecting threads), the apical areas, etc. Simple stains (Fuchsine and methyline blue) are used.

a. Sweet clover—Normal type of **R. mutabile.**
b. Red clover—Hyper-nourished type of **R. mutabile.**
c. Bean, Pea and Bur Clover, Lupine, etc.

2. **Hay Bacillus.**—Developed in boilt hay infusion. This organism is also of comparatively large size. It serves to illustrate motility, chain formation and spore formation. Several methods of spore staining will be tried; also double staining (contrast staining). Flagellar staining will not be attempted.

3. **Rotting Bacteria.**—As found in decaying fruit, as apples, tomatoes, potatoes, etc. Decaying fish, meat, etc. These are examined as to their morphological characteristics, motility, etc. Simple staining.

4. **Commercial Bacteria.**—A study of some of the bacterial types used commercially. Plate and tube cultures will be made of some of them. The following will be examined as to material used and as to bacteriae types.

a. Azoa.
b. Lactone tablets.
c. Yoghurt tablets.
d. Bacillary tablets.
e. Kefir granules.
f. Mouratus. Ratite.

5. **Lactic Acid Bacillus.**—In sour milk, in fermenting vegetable matter, etc.

6. **Vinegar Organisms.**—Mother of Vinegar.

7. **Yeast Organisms.**—In fermenting saccharine solutions, fruits, cider, wine, etc. In yeast cakes, etc. A study of cell budding, vacuoles, form types, etc.

8. **Moulds, Smuts, etc.** — Green mould. Mould in canned fruits, vegetable matter, etc. A study of pyphal branching and spore formation.

9. **The Mycorhiza of Oak Seedlings.**—Illustrating an interesting form of symbiosis.

Text-book—Schneider's Pharmaceutical Bacteriology.

(To be Continued.)

How Hookworm Disease is Caught.

The source of every case of hookworm disease is eggs of the parasite in the feces of infected people.

Young worms hatch from these and after four or five days become encysted and infectious.

These can gain entrance to the body through the mouth, on dirty hands, in food and water, or through the skin in any way in which the infected material comes in contact with it, chiefly as a result of going barefooted; possibly also infection through wet shoes.

The fact that one or many attacks of ground itch is a part of the life history of almost every boy living in an infected locality, whereas those from noninfected localities do not know what the disease is; that experimental hookworm infection through the skin produces lesions identically like ground itch, and the further fact that in infected localities the skin is almost daily exposed to soil and water polluted with human excreta, whereas drinking water and food are far less exposed, all indicate that skin infection is the practical and almost the only one that actually occurs.

The worms penetrate the skin chiefly through the hair follicles and sweat pores, enter the blood stream, pass through the right heart to the lungs, into the bronchi, thence to the mouth and now are swallowed, pass through the stomach to the small intestine, where they attach themselves to the mucous membrane and develop to adult life.—Monthly Bulletin, Indiana State Board of Health.

Extirpation of Bacillus Diphtheria.—His experiments have convinced Ten Broeck that Achlya muscaris possesses the power of destroying B. diphtheriae in culture and in the throat. Throat inoculations of this fungus are usually self-limited and may require some adjustment in the way of repeated inoculations or inoculation in special areas or under special conditions to embrace all complications in the nose. It has the power of inhibiting the growth of a number of throat pathogens and seems to influence favorably membranous anginas of various origin. Its clinical use seems to be attended with no danger but after treatment with mild antiseptics is recommended to remove the fungus. It is applicable in all stages of the disease and seems to give speediest results in the early cases. There are grounds for believing that a throat in which this fungus is growing is soon shorn of its danger of contagion even if the diphtheria bacilli are still harbored. It is admirably adapted to the clinical requirements for reliable and ready use.—Journ. A. M. A.

EXHIBITS OF CHEMICAL AND PHARMACAL INDUSTRIES AT THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION.

The exhibits from the chemical and pharmacal industries of the world will be shown in the splendid Palace of Liberal Arts at the Panama-Pacific International Exposition in 1915, and their extent promises to be as inclusive as their variety will be instructive and interesting.

The diversity of these displays is seen in the fact that soaps and perfumes are scheduled under group 36 of the Exposition's book of classification, and so are apparatus and processes for the compression and liquefaction of gas. Pyrotechnics, bombs and signals, together with matches, will find a logical place in chemical relationship with the by-products for pharmacal use obtained from treatment of petroleum and coal-tar derivatives. The evolution of the den of an ancient alchemist will be seen in model laboratories of the present with complete equipment installed.

The extent of the industrial interests that are embraced in this department is disclosed in the statistical eloquence of the United States Census Bureau, which shows that there are 5,168 establishments in the United States devoted to the production of articles involved in the chemical and pharmacal arts, with an invested capital of $419,930,000, employing 109,309 persons earning $73,491,000 and producing $455,095,000 annually.

In connection with this exhibit it is expected that there will be carried on a most interesting series of public demonstrations; exhibitions, for instance, of the research work carried out by the use of liquid hydrogen and illustrating the properties of matter at the temperatures approaching "absolute zero," should be of engrossing interest.

There is, according to scientists, a point at which heat is extinguished, where "the molecule ceases to vibrate." This theoretical point is called "absolute zero." It has been scientifically stated to be at 460.6 degrees, Fahrenheit, below zero. The lowest temperature recorded by Arctic explorers is 72 degrees below zero, though balloon-carried thermometers have registered as low as 100 degrees below zero, by thermometers carried to a height of nine miles, at which altitude the 100 degrees below zero weather prevailed.

Another series of experiments that is calculated to prove as interesting in a popular way as important scientifically will be the demonstrations devoted to the exposition of liquid air. These experiments, as prosecuted under the genius of Professor Dewar, have been reduced to the terms of popular understanding without rendering negative their scientific value.

The principle upon which Professor Dewar constructed his apparatus for liquid air production is elemental. Vapors and gases in a state of expansion release heat and reduce temperature. His successful experiments grew out of the extremes to which he carried this principle and the marvelous precision of the apparatus employed. The low temperature required for solidifying hydrogen was attained in three progressive stages. The liquefier was divided into three concentric and corresponding parts. The low temperature of the first stage became the high temperature of the second, and the low temperature of the second became the high temperature of the third. Step by step the theoretical, critical temperature has been approached and gas after gas solidified, the element helium alone resisting all efforts to reduce it to a solid state.

The Federal Government's interest in these experimental processes is sufficiently indicated by the fact that the United States has installed a complete "low temperature" plant in Washington and is proceeding with more important experiments. Germany is another nation deeply interested, and the more recent achievements in that country in the field of synthetic carbon chemistry being largely responsible for the reputation popularly ascribed to Germany of being in the lead of all nations in individual chemistry—a belief intimately associated with Germany's recent brilliant achievements in her color industries.

It is probable that these experiments in what until recently was the world's greatest mystery—next to life itself—the mystery of heat, will be carried on at the forthcoming Exposition under the light of the latest research and knowledge.

Theodore Hardee, chief of the Department of Liberal Arts, says that there has been a more than gratifying response made to his invitations to participate, and that all nations will send their representatives and products to this most interesting department of human enterprise. From attar of roses brought from Bulgaria—the world's almost single source in the Balkan Mountains—to perfume from Brazil, herbs from China and medicine chests from France, the American exhibitor is promised much friendly but vigorous competition to the importance of which he is, says Mr. Hardee, fully alive, his concern arising no less from impulses of patriotism than from motives of business and the opening of new trade routes and commercial centers due to the completion of the Panama Canal and the consequent opening up of the Orient and the rich nations on the western coast of South America.

CLEANING SILVERWARE.

By L. V. REDMAN.

The discovery and recent perfecting of electric silver cleaners mark a distinct advance in the art of silver polishing.

Silver polishes and cleaners have consisted until very recently of materials which dissolve off the tarnish or cut it off by rubbing with fine powders. The black oxide or sulphide which forms as tarnish upon the surface of polished silver appears at first as a film so thin that it displays beautiful iridescent colors of purple and blue; the thickening of the film produces the black oxide color. Solvent polishes are composed of chemicals such as ammonia and cyanide of potash. These chemicals dissolve off the black coating and leave the silver a beautiful satin finish on the surface. The cyanide polishes are very poisonous and should be used only with the greatest caution.

Abrasive polishes are composed of very fine powders and are designed to cut away the tarnish. The powders are very hard materials, such as, for example, tripoli, rouge, double floated silica, volcanic ash, kieselguhr, fuller's earth and pumice. Each particle as it passes over the surface of the silver cuts off a small part of the tarnish coat, the scratch being too small to be seen by the eye without the aid of the microscope. This method of cleaning silver is very wasteful, as it not only destroys the tarnish, but also destroys or wears away the silver. However, it is the only method which will give to silver that excellent, burnished shield effect, which at times is so much to be desired.

New electric silver polishes are being introduced to the public. They are designed to take advantage of the electric current which exists between two metals, when these metals are in contact with each other in water. The electric current, which is produced when two metals are in contact in water, is much stronger if an electrolyte like washing or baking soda or common salt be added to the water. The potential is further increased if the water be brought to boiling. Early attempts to make these polishes a commercial possibility were unsuccessful, for the metal used was tin. The water and soda were put in a tin pan and the liquid was brought to boiling. The silver articles to be cleaned were placed in the pan, immersed in the boiling water and in contact with the tin dish. When the pan is new the silver is cleaned rapidly, but the tin soon dies or becomes passive, that is, covered with an insoluble film of tin oxide, which will not conduct the electric current. Once the tin pan becomes passive, it is thrown away and a new one takes its place. The fault never lies with the powder. The powder is invariably soda or soda mixed with a little common table salt.

With the introduction of aluminium kitchen utensils another method was adopted for cleaning the silver. The aluminium dishes were used in place of the tin. The voltage is much higher between aluminium and silver; the cleaning of the silver is the matter of a moment if a spoonful of soda be added to the boiling water. The pan will clean the silver if the silver is left in cold water in the pan over night. However, this method of using aluminium utensils is not to be recommended, as the vessels are soon blackened on the inside and the aluminium ware is dissolved away by the soda and destroyed.

Aluminium dishes have been made and patented, for the special purpose of serving as silver cleaners. These boxes or pans are fitted at the bottom with rods of zinc which serve as an electric contact between the aluminium and the silver articles. The pans or boxes work fairly satisfactorily, and because the zinc rods serve as conductors, they do not go passive or dead as the tin is inclined to do.

Another form of electric polish has been introduced into the market very recently which for cheapness and efficiency is at present unequaled. The powder is put in small packages and is accompanied by a sheet of metal which is an alloy of aluminium and other metals higher in the electric series. All that is needed is a vessel of granite, iron or tin in which water may be boiled. The powder is put into the boiling water and the sheet of metal is thrown in among the silver articles which are being cleaned. The only precaution necessary is to take care that the piece of metal is in contact with the silver. The cleaning is done in a moment and several pieces of silver may be cleaned at the same time. As soon as the cleaning is accomplished the metal should be taken out and washed in hot water and dried, if the best service is to be obtained from it. As these silver cleaners are composed only of washing soda and salt, there is nothing in them injurious to health. The silver after cleaning should be washed in pure hot water and dried, otherwise it may have a slightly yellow color and taste bitter or brassy. These effects are due to the soda which remains upon the surface of the silver and tarnishes it yellow. These electric polishes do not dissolve the tarnish of silver as ammonia and cyanides do. Nor do they wear off the coating of black as the rubbing powders do. The blackened silver is actually reduced to bright metallic silver by this method and is replated upon the silver article. Thus the silver surface is preserved and the life of the silverware prolonged indefinitely by this treatment. Laboratory tests have shown that silver vessels placed in sulphur or sulphides until the silver is blackened and then cleaned by this electrolytic method, do not lose enough silver in one hundred treatments to be detected with a scale which weighs accurately to one two hundred and fifty thousandths of an ounce. The rapidity of the cleaning, the simplicity and the cheapness of the method, and the saving on the silver, should recommend the method to every one interested in silver cleaning.—Scientific American.

DEPARTMENT OF AGRICULTURE TO ISSUE NEW SERIES OF SERVICE AND REGULATORY ANNOUNCEMENTS.

A new series of publications to be known as "Service and Regulatory Announcements" has been inaugurated by the U. S. Department of Agriculture. The object of the series is to issue periodically in convenient form full information as to rulings, decisions, instructions, etc., in the enforcement of the Food and Drugs Act, the Meat Inspection Law, the Insecticide and Fungicide Act, and the various other quarantine and regulatory provisions. The new announcements, which will be issued separately by each bureau or board charged with law enforcement, will be somewhat similar to the decisions issued by the Treasury Department.

Heretofore announcement to the public of legal proceedings, official decisions, and the establishment of precedents under the several laws has largely been in the form of single printed sheets or individual letters which were ephemeral and of different sizes and forms, and therefore difficult to assemble and bind. Under the new plan, especially in the administration of the Food and Drugs Act, whenever an important ruling is made by letter, in answer to a specific request from a manufacturer, this ruling will be published in the service announcements of the Bureau of Chemistry. In this way it will be impossible for a manufacturer to obtain such a ruling unknown to his competitors and thereby gain an unfair trade advantage over those who might be unaware that such an individual ruling had been issued.

As far as possible the free circulation of the Service and Regulatory Announcements will be limited to public officers, persons or firms who have official relations with the Department, and persons whose knowledge of the contents will aid in the enforcement of the various Acts. As a rule only one copy will be sent to each person. Provision will be made whereby those not coming within the foregoing classes, or who want a large number of copies or wish to obtain notices of judgment in individual form, can subscribe for the periodicals or purchase additional copies or large supplies from the Superintendent of Documents at the Government Printing Office, Washington, D. C.

SECRETARY OF AGRICULTURE MAKES ANNUAL REPORT.

Plan to Reorganize the Department.

To promote the condition, allow greater latitude in carrying out of projects, and to establish a more logical handling of regulatory work and research, investigation and demonstration work, the Secretary will ask Congress in the coming estimates for authority to prepare a plan for reorganizing, redirecting, and systematizing the work of the Department as the interests of economical and efficient administration may require. This plan would be submitted in the fiscal estimates for 1916. It is believed that the Department can best carry on its functions and carry its information to the people it seeks to serve, probably by having its work conducted in five or six main groups such as a research service, a regulatory service, a State relations service, a rural organization service, a forest service, a weather service, and others as special occasion might warrant.

Promotion Based on Efficiency.

A system of efficiency ratings affecting all clerical and subclerical employees, designed to eliminate all danger of favoritism and to provide for promotion entirely upon merit, has been established.

Increased efficiency and considerable economy have been gained through changes in the handling of fiscal matters.

It is recommended that the Department be given authority to increase the minimum salary of $4,000 which now can be paid to scientific investigators. It is pointed out that many of the leaders in the Department could command salaries in many cases more than twice what they are receiving.

Country to be Districted to Enforce Food and Drugs Act.

Certain reorganizations have been effected in the Bureau of Chemistry looking toward more effective administration of the Food and Drugs Act and to greater constructive technological assistance to manufacturers in avoiding waste, reducing cost of manufacture and to help them develop purer products which will comply with the law. The country will be divided into several districts each under the direction of a competent official. All branch laboratories and food inspectors will be under single direction and will work together instead of being independent of each other, a condition which led to lack of coordination in the past. Certain branch laboratories will be consolidated because the work can be done more effectively and more cheaply in the larger central laboratories which are provided with complete equipment and specializing chemists. Effort will be made to make the act more of a hygienic measure through increased attention to milk, eggs, oysters, and fish, which are subject to organic contamination and may become carriers of disease.

To bring about greater harmony in the work of the State food officials and the Department in food and drug work, the Secretary called a conference which was attended by representatives of 32 states, the District of Columbia and Porto Rico. It is believed that this conference has promoted much better understanding and will lead to a number of specific improvements. An office which will act as a clearing house of information among the state and federal food and drug officials will be established to prevent duplication of work and promote harmonious action and co-operation. Experience has revealed certain weaknesses in the food and drugs act—notably the lack of provision for legal standards, and its failure to apply to certain external remedies. The Secretary will ask that authority be granted to prepare and submit such amendments to this law as may be deemed needful to safeguard the health of the people, establish standards, better define drugs, improve the food supply and promote uniformity in the matter of food legislation.

Prosecutions Under Food and Drugs Act and Other Regulatory Acts.

Prosecutions under the Food and Drugs Act and other regulatory statutes will be expedited and made still more effective through co-operation with the Department of Justice whereby the Solicitor will prepare cases in the form of criminal informations and place at the service of the U. S. District Attorneys in the trial of cases the Department's attorneys who are thoroughly familiar with the highly technical and technological aspects of many of these causes. Under the Food and Drugs Act, 1048 cases were transmitted to the Department of Justice. Fines amounting to $23,463.50 were imposed in 596 criminal cases, and decrees of condemnation and forfeiture entered in 365 other cases. Eight hundred and sixty-seven Notices of Judgment were published. The courts have evinced a disposition to impose more severe penalties in food and drug cases.—Pharm. Review.

A Story of Ether.

"The Purest Ether, the Best Container," is a figure of speech that is likely to become as familiar as "Five Seconds by the Watch." You see it in the leading pharmaceutical journals. You see it in the medical journals, if you happen to read them. And to what does it refer? To Parke, Davis & Co.'s ether for anesthesia—this and the dropper container which somebody has called an inspiration, so well does it serve its purpose: so simple, so practical, so generally satisfactory is it withal.

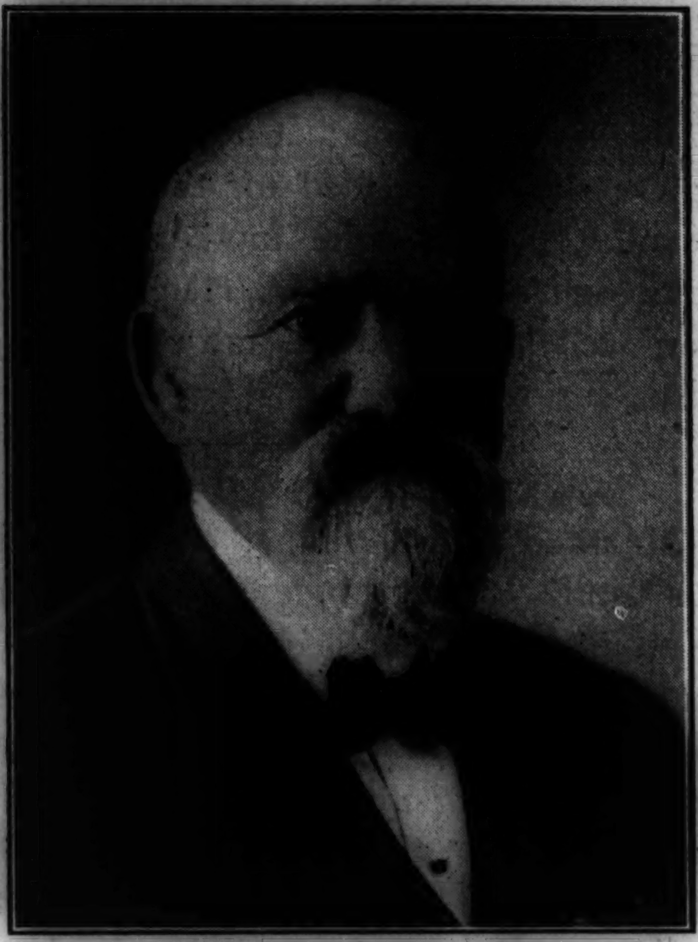
There is a story behind the ether and the ether can.

Parke, Davis & Co. decided to market the anesthetic a number of years ago. With this decision came another decision —not to add ether to their list until they could offer a purer product than that supplied by any other firm, and in a better container. As for the anesthetic itself, it is said to have taken more than a year of time and numberless experiments to insure the requisite degree of purity. But the time and effort were well expended, since the result is what is said to be "the purest available ether for anesthesia"—an ether that meets and surpasses the United States Pharmacopoeial specifications, as well as the specifications of the pharmacopoeias of England, Germany, France and Italy. But then the riddle was only half solved. There still remained the problem of "the perfectly satisfactory container"—a dropper-can that would be simple, reliable, economical and safe—a can, moreover, that could be properly washed and sealed. This resolved itself into the loss of another year of time, the expenditure of a lot of money, and the destruction of thousands of cans. Eventually, of course, the "perfect container" was realized.

Parke, Davis & Co.'s ether can enables the physician to administer the anesthetic by the drop method. It obviates the use of special apparatus—wicks, notched corks, dropping-tubes and other devices which are an abomination to the average anesthetist. The container is a hermetically sealed package, the dropper feature consisting of a piece of thin capillary tubing which, in the form of a semicircle, enters the top of the can at diametrically opposite points. When ready to administer the ether the physician or his assistant cuts the tube with a knife and bends the two pieces, in curved form, over opposite edges of the can. One tube allows the entry of air to the container; the other permits the flow of ether, which is regulated by inclination of the can. Any portion of the anesthetic remaining in the container may be preserved by pinching the ends of the tubes, which are cut off when the ether is again required for use.

"The Purest Ether, the Best Container," apparently, is no empty phrase, and one can readily understand why the demand for Parke, Davis & Co.'s ether for anesthesia, like the proverbial small boy, is "healthy and growing."

OBITUARY



JAMES G. STEELE.

James G. Steele, pioneer of California and leader in pharmacy on the Pacific Coast, died at his home in San Francisco on Monday, February 2, 1914, at the age of 76 years and 38 days. His end was peaceful and wholly unexpected. On the morning of the second of February Mr. Steele arose cheerful and happy as usual. The day being beautiful, he took a long walk, returning refreshed, even expressing a desire to go for another stroll, but acting on the suggestion of his wife, he took a book on music, sat down in a chair, and when Mrs. Steele entered the room a few minutes later she found him dead, head slightly inclined, book still in his hands. Remarkably enough, Mr. Steele wrote his autobiography two weeks before his death, a portion of which is used in the preparation of this sketch.

Mr. Steele was born in Boston, Mass., December 25, 1838. He completed the studies of the grammar schools, and two years of the high school. He came to California at the age of 15 and entered the employ of George C. Shreve and later that of his uncle Wm. W. Keith. He proved a trustworthy helper and Mr. Keith placed him in charge of one of his drug stores. He studied chemistry under Dr. Raymond, who had taught chemistry in the Cincinnati College of Pharmacy, and botany under Dr. Kellogg, the well-known curator and librarian of the California Academy of Sciences.

Mr. Steele was largely instrumental in organizing the California Pharmaceutical Society in the year 1868. In 1878 he gave up the retail drug business and devoted himself to supplying the Eastern and European market with California crude drugs, but in 1880 he again opened a retail store largely devoted to prescription work. In 1895 he was made city chemist of San Francisco, which position he held for two years. He became a member of the American Pharmaceutical Association in 1859, in which organization he was always active and contributed several papers to the proceedings, one on *"Grindelia robusta"* and one on the "Drug Market of San Francisco," which also contained a list of California medicinal plants; another paper was on "The Pines of California."

Mr. Steele was also an active member in the newly organized California Pharmaceutical Association, attending its meetings and contributing several pages of historical interest. A very full history of the California College of Pharmacy was completed shortly before his death. When the old California Pharmaceutical Society decided to establish a College of Pharmacy in 1874, Mr. Steele, with W. T. Wenzell, W. M. Searby, J. W. Forbes, John Calvert, Mr. Simpson and Mr. Mayhew, were appointed a committee with power to incorporate such a college, becoming the first trustees of the California College of Pharmacy.

Mr. Steele was a most enthusiastic botanist, devoting much time to the study of the flora of California. In 1876 he sent 50 different species of California medicinal plants to the Philadelphia College of Pharmacy, at which time his intimate friend, Prof. Maisch, was instructor in Materia Medica in said college. Mr. Steele was essentially a student of books, of nature, of people. He was possessed of a most genial nature and a kindly disposition. He made many warm friends. His favorite author was Shakespeare, from whom he quoted freely. His favorite recreation was music, being a performer and composer of considerable ability. It was this fondness of music which brought him in touch with the late Winchell Forbes.

The following intimate friends of Mr. Steele have preceded him by a few years or less: W. M. Searby, John Calvert, J. McDonnell, W. T. Wenzell and H. H. Behr, all from San Francisco. Each one of the men named represents a distinct landmark in the progress of pharmacy on the Pacific Coast.

MRS. FINGER.

Mrs. Mina Finger, a pioneer of California, mother of Henry J. Finger, died at Santa Barbara, December 4, 1913, at the age of 87. She was well known for her philanthropy and was granted a pension by the United States for personal services rendered during the war with Mexico. At the 1876 Centennial Exposition she was presented with a medal in commemoration of her noble service to the sick and wounded soldiers of the war through which her husband fought bravely.

Mrs. Finger was laid to rest in Union Cemetery, Redwood City, California, where she had resided for the past fifty years. She was the mother of three sons, one of whom, Mr. Henry J. Finger, well known to all California druggists, survives her.

MAXWELL VAN LAMME.

Maxwell Van Lamme, chief chemist for Coffin Redington, died at his home in San Francisco, December 29. He had been in poor health for some time. He was well known to the many pharmacists who visited the firm of Coffin and Redington. He was always kindly, courteous and gave strict attention to business. He was a most capable chemist and took great pride in his work. He will be missed, not only by the firm by whom he was employed, but also by the many druggists and chemists of the State of California.

For my part, people who do anything finely always inspire me to try. I don't mean that they make me believe that I can do as well as they, but they make the things seem worthy to be done.—George Eliot.

LABORATORY NOTES AND COMMENTS

By ARTHUR REUM.

SYRUP TOLU.

Soluble Fluid Tolu is so extensively used for preparing Syrup of Tolu that perhaps pharmacists do not realize that it costs almost twice as much as when made by the U. S. P. method.

EXTEMPORANEOUS METHOD.

Fluid Tolu	.70
Syrup	.50
Per gallon	$1.20

U. S. P.

Tincture Tolu	.20
Syrup	.50
Per gallon	$0.70

In making this syrup, we have found a forty per cent. tincture satisfactory. It affords greater concentration of the balsam with a minimum amount of alcohol. Of course a fifty per cent. tincture would serve equally well. The reason the Pharmacopoeia specifies a twenty per cent. tincture is because that one happens to be official. Using the stronger tincture the formula would be:

Tincture Tolu 40%	25 cc.
Magnesium carbonate	10 gm.
Sugar	820 gm.
Water, q. s. ad	1000 cc.

To make the tincture it is only

necessary to place 200 gm. of the balsam in a bottle, fill with alcohol to 500 cc. and allow the former to dissolve. It is not necessary to filter the tincture provided a good quality of balsam has been used. When large amounts of foreign matter are present filtering is required in order that the proper corrections can be made in measuring.

The 25 cc. is measured into a large mortar. If the magnesium carbonate is added a little at a time the tincture is more uniformly distributed during the trituration. Sixty grams of sugar may be mixed with the tincture and carbonate. After a thorough rubbing with the pestle, 450 cc. of water is added gradually with constant trituration. The magnesia when the first portion of the water is added, swells to form a magma and the remaining water is easily incorporated. The mixture is now filtered and the remaining sugar dissolved in the clear filtrate, enough water being added through the filter to make the required amount. A gentle heat may be employed to hasten the solution of the sugar. This has a tendency to darken the syrup. The greater the heat the darker the color. So we have syrups ranging from a very pale to a pronounced brown. This is due to the oxidation products generated by the heat.

When prepared in this manner Syrup of Tolu has a very fine aroma and an excellent flavor, while that made from the soluble fluid is wanting in these respects. The difference in price should also be taken into consideration as the pharmacist can well afford to make this preparation during dull hours, and have a product which is U. S. P.

Syrup of Citric Acid.

You may have noticed that the U. S. P. process for making this syrup does not give a clear preparation; but one which has a cloudy, unsightly appearance.

A few changes in the manipulation of this product produces a clear, transparent syrup. We wish to suggest the following as superior to the method now official:

Spirits of lemon	10	cc.
Magnesium carbonate	5	gm.
Citric acid	10	gm.
Sugar	820	gm.
Water, q. s. ad	1000	cc.

Triturate the spirits of lemon in a mortar with the magnesia and gradually add 400 cc. of distilled water. Filter, and in the clear filtrate dissolve the sugar and citric acid by agitation. Pass enough water through the filter to make 1000 cc., and when the sugar is dissolved, strain.

The reason for using the spirits of lemon instead of the tincture of fresh lemon peel is that the latter, though official, is not practical in pharmacies, and may vary in strength according to the lemon peel obtainable.

The carbonate of magnesium aids in the distribution of the oil in the tincture so that it will mix with the water. It is of equal importance here as in the other syrups, i. e., syrup of orange in which it is used.

After pouring the filtrate into a suitable bottle add the sugar. When large quantities are made it is very important to pour the sugar into the filtrate as this thoroughly moistens every part of the sugar and prevents it from cakeing on the bottom of the container. The syrup is now shaken from time to time until solution is effected.

Clothes-pins, the kind which are provided with a spring, will be found very handy in holding the gauze in the funnel when the syrup is to be strained. The straining removes any dirt, wood or foreign matter which may be present in the sugar, and the finished syrup will be bright and clear.

Two tons of cascara bark have just been sold from the Siuslaw national forest, Oregon, at one cent a pound.

THE SODA FOUNTAIN

Aromatic Beef Bouillon.

Into a hot mug draw two teaspoonfuls of the following extract and fill with hot water. To make the extract cook one onion, half ounce of curry powder and half ounce of whole black peppers in a pint of water until the strength of the onion is exhausted. Strain and add one pint of liquid extract of beef, three ounces of salt, three drams of Worcestershire sauce and two teaspoonfuls of caramel and mix thoroughly.

Malted Milk Clamette.

Pour two ounces of clam bouillon into the mug, into this mix a heaping teaspoonful of Horlick's malted milk, add a little salt and fill with hot water and top with a little whipped cream.

A Chicken Bouillon for 5 Cents.

This has been made possible by the chicken bouillon cube which is new this season. Prepare it as follows, and you will find it very good. Dissolve the cube in a little water, add two teaspoonfuls of cream, the least bit of red pepper, and a little powdered cinnamon, and fill with hot water.

Tomato Bouillon.

This is rapidly becoming one of the leaders, especially at those fountains at which it is served as a finished beverage. It will pay you to serve this if no other finished bouillon. The equipment necessary is a small gas plate and an aluminum double boiler. Buy some good newly-made tomato soup. This is really the quickest and cheapest way. Buy the large cans. Use one part of soup to two parts of water, add salt (about a teaspoonful), pepper (about one fourth teaspoonful), one-half teaspoonful of mixed spices and a dash of red pepper, serve hot with salt crackers. If you want something even richer, use one-third less water and you will have them all talking about your tomato bouillon. It's a winner.

Beef Cube Soup.

Put a beef cube into a mug and add three drops of Worcestershire sauce and one drop of tobasco sauce. Fill with hot water, and stir until the cube is dissolved.

Bouillon Hongroise.

Put a beef cube into a cup and dissolve in hot water. Add two teaspoonfuls of tomato catsup and one-half ounce of cream. Fill with hot water, and season to taste with pepper and salt.

Hot Egg Malted Milk Chocolate.

Into a mixing glass draw one and a half ounces of chocolate syrup; into this break an egg and add an ounce of sweet cream and two teaspoonfuls of Horlick's malted milk. Shake thoroughly and strain into a clean ten-ounce glass and fill with hot water.

Egg Consomme, Hot.

Into a mixing glass break an egg and add two teaspoonfuls of liquid beef, one ounce of sweet cream, and season with salt and pepper. A little tincture of celery seed and mixed spices may also be added. Shake thoroughly and strain into a clean ten-ounce glass and fill with boiling water.

Tomato Clam Broth.

Into a hot soda mug draw one ounce of tomato bouillon and one ounce of clam juice or one and one-half ounces of clam juice and one-half an ounce of tomato catsup and add a dish of cream. Season to taste and fill with hot water. Into this place a small piece of butter and serve.

Always Ready Lemonade.

There is nothing more refreshing on a hot day than a long drink of cool lemonade, but however anxious the hostess may be to serve this beverage, it is sometimes impossible to do so owing to the lack of necessary ingredients. In fact, it is for just this reason that the syrup that may be prepared by the following recipe is one of the greatest household conveniences. It is delicious, but what is still more important, it enables one to procure a supply of lemonade literally at a moment's notice. Extract the juice from a dozen large lemons; grate the rind of six of the lemons, and add to the juice. Let the mixture stand for twelve hours overnight. In the morning make a thick syrup of granulated sugar and water, using about six pounds of the sugar, and just as little water as possible, as the syrup must be both thick and smooth. When it has colled, strain the lemon juice into it; bottle in glass, being certain that the tops are secure and air-tight. In making lemonade with this syrup, place a little crushed ice in the bottom of a tall glass; add one or two teaspoonfuls of the syrup, according to taste, and fill with either carbonated or plain water.

THE NEWS BUREAU OF THE PACIFIC PHARMACIST

CALIFORNIA PHARMACEUTICAL ASSOCIATION NEWS.

A meeting of the Executive Committee and Officers of the California Pharmaceutical Association was held at San Francisco January 15th, to look into the affairs of the Association. The conduct of the Society is in the hands of the Executive Committee between the annual meetings, and President Sanford has adopted the plan of calling occasional meetings of the above committee to see that interest is kept alive. While this is not a Legislative year, no grocer's bills to fight, or Insecticide measures requiring their teeth drawn, still there are many other matters of moment requiring attention.

Besides President Sanford and Secretary K. B. Bowerman, there were present Messrs. Rees, N. Schwartz, Pellerano and Philip. N. Schwartz was present by appointment as a delegate from the S. F. R. D. A., in regard to the Harrison Anti-Narcotic bill, known as House bill No. 6282. Discussion of this proposed national regulation of the habit-forming drugs was accordingly taken up first, and after considerable discussion it was agreed that the Secretary should communicate with the Secretary of the N. A. R. D. in regard to the bill, calling attention to the latitude allowed the dispensing doctor under clause A, Section 2.

The Secretary read a communication from the Santa Cruz druggists (who have accepted responsibility of providing the Association with its next annual meeting place), calling their attention to the fact that the Casa del Rey Hotel would not be open until June 1st, and suggesting that the May meeting be postponed until the latter part of June. As there has been some previous criticism of the meeting time, it was decided to send out letters to the members asking them what time would be most convenient for them, May or June. It is possible that a majority will prefer to go in June, staying over for several days after the meeting, as Santa Cruz is a delightful spot to be in at that time of the year.

Other matters under discussion were those of exhibits at State meetings, free literature from the Government for the druggists (if you are interested, write Secretary Bowerman and he will tell you how to get it), and the incorrect guarantee labels on many of the patent medicines. Mr. Philip called the attention of the Executive Committee to this matter and it was finally decided to place it in the hands of the Secretary, with the understanding that he would take it up with the State Board of Health and the jobbers and endeavor to get all the manufacturers making their goods in California to make their guarantee broad enough to cover the requirements of the California law.

Mr. Rees was appointed a committee of one to confer with the Committee on Congress of Pharmacy, 1915. It was felt that this committee should be at work on some definite plan by this time, to see that the visiting druggists of the world would have some place to call headquarters on their arrival in San Francisco. It was suggested that a fund should be raised (largely by the San Francisco trade) for the maintenance of permanent headquarters in the city during the time of the Fair, when the principal manufacturers of drug store supplies and apparatus would maintain exhibits, and the visiting pharmacist within the Golden Gate would find a place of rest and welcome.

The Secretary was instructed to inform the Legislative Committee that it was time they too were getting busy, that many local ordinances in different counties or cities of the State were unjust or discriminated against the drug interests, and suggesting that they see what could be done toward a reconstruction of them.

Mrs. W. B. Philip reported through Mr. Philip that, following out the instructions of the Executive Committee at a previous meeting, she and her committee were at work arranging for a series of debates, not papers, on live topics of the day, of interest to the trade. This is for the Santa Cruz meeting and is going to be tried out as an experiment. Those favoring the change contend that it will bring out a larger attendance. The plan as outlined, is for the Committee on Papers to select a half dozen or so live topics for discussion, appoint certain members to discuss them pro and con, who are supposed to know what they are talking about. This should lead to some lively debates, and if conducted along the proper lines, will prove decidedly more interesting than papers.

K. B. BOWERMAN,
Sec'y, 238 Stockton St.

W. P. A. P. C.

(January Meeting.)

The regular monthly meeting of the Women's Pharmaceutical Association of the Pacific Coast was held January 24th, 1914, at Assembly Hall, Pacific Building, San Francisco. The chairman of the committee on papers had prepared an elaborate program for the evening and many new points on the preparation of tincture of cudbear, prescription compounding and a serviceable label varnish were discussed. An interesting paper on Radium was presented by Dr. Barbat Winslow, Miss Low read a paper on Emetine Hydrochlodate, Mrs. White read a paper on the new Lloyd reagent, Alcresta, the data for which was supplied by Dr. Lloyd, the discoverer. Much interest was manifest in the subject. Mrs. White and Miss Low lead in the discussion which followed. Others who took part in the discussion were Mrs. Kane, Miss Roehr and Dr. Barbat-Winslow. Samples of Alcresta, Strychnine Tablets, Morphine, and Berberine were on exhibition, supplied from the J. U. Lloyd laboratory.

The following officers will serve the Association for the ensuing year: Mrs. R. E. White, President; Miss Clarissa Roehr, First Vice-President; Miss Ethel Nelson, Second Vice-President; Dr. J. E. B. Winslow, Secretary; Mrs. A. D. Kane, Treasurer.

The next meeting of the Association will be held at the Assembly Hall, Pacific Building, San Francisco, February 27, 1914.

SAN JOSE LADIES' AUXILIARY OF THE C. PH. A.

Mrs. Frank Fleming of San Jose recently entertained the wives of San Jose pharmacists. The members of the Auxiliary brought with them their needlework and combined pleasure with business. Refreshments were served and it was late in the afternoon when the guests made their farewells to their kind hostess.

CALIFORNIA COLLEGE OF PHARMACY NOTES.

The college year at the California College of Pharmacy is now well over half completed, and the student body as a whole is buckling down to the final spurt. The senior classmen are preparing their theses, which must be in the hands of the dean during the first week of March.

Some time back a proposition to change the present degree of *Pharmaceutical Chemist* (Ph. C.), to the degree of *Graduate in Pharmacy* (Ph. G.), was submitted to the student body, but was rejected by a large vote. Graduate in Pharmacy is the standard degree given by most colleges for a two years' course and will undoubtedly be conferred at the California College of Pharmacy within the next year or two.

The annual election for officers of the college paper, "The Graduate," was held recently, at which Percy Neales of Berkeley was elected editor, and Robert Clark of Pasadena was elected manager. Material for the issue is coming in rapidly and the paper will go to press in ample time to be distributed before the close of the college year.

The students of the college attended in a body the moving pictures given recently of the plant of Eli Lilly & Co. at Grauman's Theatre.

During the latter part of January the senior class took a trip through the plant of a local soap works. Many similar trips are planned for the remaining months of the college year.

W. FRANK SEDGLEY, Reporter.

DR. RUSBY HONORED.

The Alumni Association of the New York College of Pharmacy arranged recently a magnificent program in honor of Dr. H. H. Rusby, Dean of the College, on the occasion of the 25th year of his connection with the institution of which he was made Dean some years ago. Men prominent in the educational work of New York, both the state and city, were present. Many verbal eulogies were pronounced and in addition many letters from men prominent in education and in pharmacy as well as in public life from all parts of the United States, were read. The honor thus shown Dr. Rusby was a most fitting and deserving one.

Dr. Rusby has always shown the marks of a great man. Unimpeachable character, high ideals, sensitive, human and with these necessary qualifications, a tenacity of purpose which knows not the word failure, we may divide the work which he has already done into three divisions and he is deserving of a monument for each division.

1. His investigations in systematic botany in general and in medical botany in particular.
2. His work in behalf of the purity of drugs in general and of vegetable drugs in particular.
3. His work in behalf of higher pharmaceutical education.

Dr. Rusby is still in the prime of life and he will continue the good work for which the pharmaceutical world is already greatly indebted to him. A full report of the program as it was given at the New York College of Pharmacy will be found in the January issue of the Druggists' Circular.

American Medico-Pharmaceutical League.

Members and non-members are cordially invited to attend the Sixteenth Annual Convention of the American Medico-Pharmaceutical League, on Monday, May 26, 1913, at the Hotel Astor, Broadway and Forty-fourth street, New York City, at 7 p. m.

Papers.

Clinical Notes in the Cure of Cancer by Internal Medication Alone, with Presentation of Cases and Stereopticon Views Showing Progress of each Case, Kenneth F. Junor, M. D.

Some Observations of a Laboratory Worker—(a) Examination for Gonococci; (b) Sugar Tests and their Interpretation, Samuel Levinson, D. Sc., Ph. G.

[Courtesy, New York Chapter, Intercollegiate Socialist Society]—Socialism, in Spirit and Economics, John Temple Graves, Jr., Esq. (of the Evening Journal); Socialism and the Educated Man, Harry W. Laidler, Esq.

Twentieth Century Dentistry, Samuel K. Ash, D. D. S.

Angioma Areata, Treated by a New System, Gioacchino Stabili, M. D.

Psychic Phenomena in Intestinal Toxaemia, Joseph C. DeVries, M. D.

Some Suggestions in the Diagnosis and Treatment of Whooping Cough, Philip I. Nash, M. D.

Medical Commercialism, E. G. Drake, M. D.

"Running Ears," and the Burden of Responsibility, Joseph Krimsky, M. D.

Pleurisy in Children, Newcomb L. Damon, M. D.

External Medication and Essential Oils, D. DeWaltoff, M. D.

Bacteriological and Chemical Analysis Versus Nostrums and Counter Prescribing, as Sources of Income to the Pharmacist, B. Giventer, Ph. G.

Differential Diagnosis in Gynecological Cases, Leopold Rein, A. B., Ph. G., Ph. C., M. D.

Modern Pharmacy, J. M. Mindel, Ph. G.

Advantages of Medical and Pharmaceutical Co-operation, Edwin Hesse, Ph. G.

Pharmaceutical Conditions, William F. Krembs, Ph. G.

Substitution—its Cause and Cure, M. Tuman, Ph. G.

S. WEIR MITCHELL.

Silas Weir Mitchell, eminent as a neurologist, and universally known as a writer of historical novels dealing mostly with the times of the Revolutionary and Civil wars; a medical power in Philadelphia; honored for his attainments the world over; died at his home in Philadelphia, January 4, from influenza, aged within six weeks of 85.

He was born in Philadelphia, February 15, 1829, the son of Dr. John Kearsley and Matilda (Henry) Mitchell. His preliminary education was obtained in the grammar schools of Philadelphia and the University of Pennsylvania. He was obliged to leave the latter institution in his senior year on account of ill health. His medical course was taken at Jefferson Medical College, from which he graduated in the class of 1850.

Early in his career his literary work commenced and the titles of his scientific articles alone number more than one hundred. About 1882, Dr. Mitchell entered on his career as a writer of fiction. Many of his works, such as, "In War Time," "Roland Blake" and "Westways," his latest production, dealt with the times of the Civil War, while the scene of "Hugh Wynne, Free Quaker" was set in Philadelphia during the Revolutionary War.

Dr. Mitchell was the first to institute "the rest cure" for neurasthenia, which became a recognized and valuable method of treatment, and is known the world over by the name of its originator.

Despite his advanced age, Dr. Mitchell retained, almost to the last, his physical vigor, and to the last, his metal acumen and literary ability. His last published work, "Westways," which dealt with the Civil War and which appeared in 1913, shows no diminution of interest or flagging in the charm of his writing.—Journ. A. M. A.

THIS SETTLES IT!

Washington, January 19, 1914.

My Dear Mr. Schneider:—

If your premises were correct I should not disagree with you in the least about the Hetch-Hetchy, but you are entirely mistaken as are a good many other people in the belief that San Francisco is in need of water or that the health of her people is in the least dependent upon securing water from the Hetch-Hetchy.

Sincerely yours,

(Signed) JOHN D. WORKS,
U. S. S.

CALIFORNIA STATE BOARD OF PHARMACY.

February 10, 1914.

THE PACIFIC PHARMACIST: — We herewith hand you a list of applicants granted registration at the recent examination of this Board. The next examination will begin in Los Angeles on April 8, 1914, and in San Francisco on April 15, 1914.

Licentiates.

Mervin H. Horton
Milton P. Duffy
George C. Wentz
Stewart T. McGee
Leo C. Cross
Lee Roy Carlisle
Jas. H. Haigh
Edward A. Francks
Glenn F. Coleman
Ernest G. Rurup
Carl Jacob Stadler
Ralph H. Glezen
Thomas J. Hitchcock
Edward M. Lunty
Daniel L. Dineen
Thomas Bartholomew
P. S. Pope
Clyde J. Stuart
C. Fred B. Klarer
Fred B. Mack
Charles Norford
Samuel B. Azhderian
Carl Selkin
Harold D. Clark
W. Frank Sedgley
Francis H. O'Brien
Blanch M. Hesse
Herbert F. Mauerhan
H. R. Lincoln
John G. Viebrock
Donald T. Weimer
Otto B. Lensing
Ralph H. McGarvin
Curtis T. Schreyer
Don M. Munger

Assistants.

Leslie B. Higgs
Frank Morris Smith
Anthony V. Bressani
A. C. McCullough
Ernest E. Roemer
Earl Fee Hearing
Geo. H. Walker
Guy Stanley Young
Charles E. Hoffman
L. C. Henderson
Isadore A. Melnick
Frank H. Borchard
Geo. H. Saltmarsh
R. B. Bagnell
Jacob Spooner
Samuel E. Weinberg
Augustus J. Affleck
William E. Weldy
Carl E. Kratt
R. L. Puccinelli
George H. Bolton
Clifford E. Banks
Will J. Allum
Reginald H. Winter
Fred E. Smith
John Earl Machado
Carl H. Warneck
Ronald W. MacCorkell
A. L. Wilke
Geo. A. Jeffery
Alfred Mathews
W. H. Davisson
Morris H. Rosenberg
Nicholas J. Phelan
S. Henry McManaway
Yee Lang Fu
Edson J. Harsh
W. Earl Lawrence
Geo. T. Pomeroy
Waldo Throop
Frank Carlisle
Paul Arp
Thomas F. Blake
Michael W. Conway

CALIFORNIA STATE BOARD OF PHARMACY,

LOUIS ZEH, Secretary.

A Curious Sentence.

A correspondent has contributed to the "Strand" magazine the following which (admitting the & sign) is probably the longest sentence reading the same forwards and backwards, that has yet been produced:

"Snug & raw was I ere did I live & evil I did ere I saw war & guns."

PERSONALS AND TRADE ITEMS

The Frenchman's Joke.

Bartender—What'll y' have?

Frenchman—I vill take a drop of contradiction.

Bartender—What's that?

Frenchman—Vell, you put in de visky to make it strong, de water to make it veak, de lemon to make it sour, and de sugar to make it sveet. Den you say to your friend, 'Here's to you!' and you take it yourself."

The Great Practical Advance in Serotherapy and Immunization by Means of Serobacterins.

Serobacterins are sensitized bacterial vaccines or suspensions of killed sensitized bacteria. In the language of the laboratory, they are produced by saturating bacteria with the specific antibodies found in the serum of an immunized animal, removing the excess of serum by centrifuging and suspending the bacteria in a saline solution. According to the trustworthy reports of bacteriologists and clinicians, they are destined in great measure to supplant other means of immunizing against and treatment of many infectious diseases.

Besredka, of the Pasteur Institute, authoritatively summarizes the matter by saying:—

"Whatever the nature of the virus, whether the microbe of plague, dysentery, cholera or typhoid fever, or whether the virus of rabies or the toxin of diphtheria, whether the microbes are killed or living, sensitization confers upon them properties which convert them into vaccines of the first order, possessing an action which is sure, rapid, inoffensive and durable."

The results of the clinical use of serobacterins in actual practice give, of course, the final and convincing test. Of such reports one notices that of Gordon, on the successful use of strepto-serobacterin (sensitized streptococcus vaccine) in erysipelas, emphasizing the fact that when the treatment did no good it did not do the slightest harm; that prophylactically in the face of epidemics it should have a great future; that in hospitals the resistance of the patients may be raised to bacillus coli, streptococcus pyogenes, or the pneumococcus before operations on the alimentary tract or other infected area; for preventing secondary infections and possibly in cases of difficult labor. He says that in cases already infected, the evidence shows that in a proportion of instances it is possible by this method to promote materially the patient's recovery. "By administering a sensitized vaccine to these patients, we appear to bring into action available reserves in that complex and still incompletely defined entity, the patient's specific resistance."

Speaking generally, serobacterins give active immunity within 24 hours after the first injection, with marked improvement in the patient's condition. They produce no opsonic or clinical negative phase—and, therefore, will do away with this cause of solicitude on the part of physicians using the ordinary bacterial vaccines in the past.

Great care is advisable in the selection of a sensitized vaccine, or serobacterin—the product only of that manufacturer should be chosen of the highest professional character.

A complete review of the Literature on Serobacterins appears in the Mulford Digest for December, and we suggest that those who have not received a copy of this issue request one, to be read and kept on file for future reference.

This is a good time of year for druggists to look over their stock of prescription bottles. Langley & Michaels Company is specializing in a large way in a new line of prescription ware and have three very desirable styles of Ovals under the names "Yosemite," "Marvel" and "Reliance," which are supplied either with or without graduations. This house is also prepared to execute orders for private lettered plate ware for dealers who prefer such, with unusual promptness in delivery and at exceptionally low prices. Their advertisement relating to this class of glassware will be found in the January issue of the "Pharmacist."

Now is the Time to Kill the Squirrels.

Hall's Squirrel Poison is the most reliable squirrel exterminator on the market. Not only is it efficient but it is also economical. It is sold in the quantities to suit the user. For further particulars see the full page advertisement in this issue of the "Pacific Pharmacist" by Langley & Michaels Co.

Sylvester's Haarlem Oil

For 200 Years Standard remedy of the world for
KIDNEY DISEASES, BLADDER TROUBLE, GRAVEL and all INWARD INFLAMMATION.

WE ARE EXCLUSIVE AGENTS
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From Haarlem, Holland

None Other is Genuine. Look for "C. Sylvester" on the label

M. Coward, Successor to C. Sylvester
Depot, No. 270 Greenwich Street, New York

Quite a Run.

It's an overworked word, that poor little monosyllable "run."

"I found a run started in my best stocking this morning," said the woman, "so I thought I'd run downtown and go into ————'s, where they are having a great run on silk hose. They ran an advertisement in this morning's paper, you know. Well, I ran my eye over the bargains on the way down and I saw so many things I needed that I ran out of money before I got to the hose counter. Well, I'd run my legs off by that time, but I don't run a bill at ————'s, so I was in despair until who should I run into but my husband. I got more money of him—he's more generous than the general run of men—but when I got to the counter they'd run out of my size. Wasn't that a terrible run of luck?"

And so she ran on and on and on.—Cleveland Plain Dealer.

The Mother Tongue.

"Does Miss De Gabb resemble her mother?"

"Not so much at first sight; but when she begins to talk, there's a speaking likeness."—Judge.

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That sign, in red and black, issued by the city health commissioner, is to point the way to health at all lodging houses, and remind the roomer that there is life in fresh air.

The board of health had two thousand of these cards printed at first, but it increased the order at once, and it is estimated that fully three thousand of them will be tacked up in a conspicuous place in each room in the lodging and rooming houses.—Kansas City Star.

A Truth Lover.

"Did you write Special Agent Leaky that I was a bob-tailed insurance man?"

"Never; certainly not," said the third special agent.

"Well, here's your letter, and it says just that."

"Confound Leaky! He said he burned that letter. Lord! How I hate a liar."——The Now and Then.

Too Imaginative.

Magistrate—And what was the prisoner doing?

Constable—'E were 'aving a wery 'eated argument with a cab driver, yer worship.

Magistrate—But that doesn't prove he was drunk.

Constable—Ah! But there wern't no cab driver there, yer worship.—London Opinion.

Passed by the Kink.

An inspector rubbered,
In our poison cupboard,
To see how much morphine we carried.
'Tis one of the tri-als
Of pill-craft-and-vi-als,
To be by the law-men thus harried.
—Butternut Brown in Journ. N. A. R. D.

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The advantages of **Serobacterins** may be briefly summarized as follows:

1. SEROBACTERINS do not cause opsonic nor clinical negative phase. In the process of sensitization the bacteria are saturated with the specific antibodies, consequently they do not absorb antibodies from the patient, preventing unfavorable reactions or the so-called negative phase.

2. SEROBACTERINS produce immediate active immunity.

(24 hours after the first injection an effective immunity is present and marked improvement is usually noted in the condition of the patient.)

This rapid action makes them invaluable in treatment and in preventive immunization. This is of great importance in controlling or preventing epidemics.

3. SEROBACTERINS cause no local or general reactions.

(These reactions constituted the principal undesirable feature of the Bacterial Vaccines.)

4. SEROBACTERINS produce a highly efficient and durable immunity.

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Staphylo-Serobacterin. (Sensitized Staphylococcic Vaccine.)
Strepto-Serobacterin Polyvalent. (Sensitized Streptococcic Vaccine.)
Scarlatina Strepto-Serobacterin. (Sensitized Streptococcic Vaccine Scarlatinal.)

Typho-Serobacterin. (Sensitized Typhoid Vaccine.)

Packages of 4 syringes	**$4.00**
Single syringes	**1.50**

Each syringe one dose.

For a complete review of the literature on Serobacterins, see Mulford Digest for December.

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Degrees—Pharmaceutical Chemist (Ph. C.) on completion of the two years' course. Bachelor of Pharmacy (Phar. B.) on completion of the three years' course.

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Course in Drug and Food Analysis

Open to graduates and others who are properly qualified. The course is intended to prepare the candidate sufficiently to make chemical and microscopical examinations of drugs, drug products and foods in compliance with the Federal and State pure food and drug laws. Drug assaying and other chemical work, the microscopical examination of drugs, spices and food products, and the bacteriological testing of pharmaceutical preparations, water, milk, etc., are among the subjects taught. Those who complete the course are qualified to do work in food and drug laboratories.

The next course will begin September 11, 1914, and end April 30, 1915.

For further information, address FRANK T. GREEN, Dean.

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PRICE CHANGES: The few price changes of importance during the past month are noted below: CITRIC ACID declined 3c, COD LIVER OIL $1.00 per barrel, SUGAR OF MILK 1c. SAFFRON VALENCIA advanced 70c, ORRIS ROOT 5c, MENTHOL 60c, GUM ASAFOETIDA declined 2c, IPECAC ROOT 5c, MANACA 25c. QUININE firm. Good demand but no quotable change. VANILLA BEANS, Bourbon, advanced 30c, TAHITI, 10c, RUSSIAN CANTHARIDES 20c, RUSSIAN ERGOT, 5c. SANTONIN again in the advance column—50c higher, AMERICAN SAFFRON advanced 5c. CARAWAY, HEMP, CANARY and CUMIN Seeds all slightly weaker. TONKA BEANS declined 15c. DIONIN now $10.00 per ounce. BORIC ACID advanced 1c per pound, LINSEED OIL 3c. In Essential Oils the advances include ANISE 5c, NUTMEGS 5c, PATCHOULI 75c, SASSAFRAS 5c, SAVIN 30c. The declines are LEMON 20c, ROSE $1.00, ROSE GERANIUM $1.00, WORMWOOD 10c, BERGAMOT 15c, ORANGE 15c. CAMPHOR, CANNABIS INDICA, RED ROSE LEAVES show an advancing tendency. ROCHELLE SALTS, SEIDLITZ MIXTURE, NITRATE SILVER, SAW PALMETTO BERRIES weaker.—L. & M.

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To remedy the first of these defects, experiments were made with mixtures of serum and killed bacteria, with the idea that by this means immediate passive immunity could be had, as well as a more permanent active immunity, but this procedure resulted in failure, as only a slight degree of passive immunity was secured and no active immunity whatever. Besredka attributed this failure to the excess of serum present in such mixtures, and for the preparation of his "sensitized vaccine" took advantage of the discovery of Ehrlich and Morgenroth that bacteria mixed with a serum containing specific antibodies unite permanently with such antibodies. After maceration in the immune serum for a sufficient time the sensitized bacteria are recovered by centrifugalization. The bacteria, with their antibodies attached, are then washed in the centrifuge with physiological saline solution until all traces of serum are removed. Careful complement fixation and animal tests are employed to make sure that proper sensitization has taken place, and finally the bacteria are made up into standardized suspensions for administration. Since the value of serobacterins depends on thorough sensitization, and the complement fixation test proves the extent to which this has taken place, this test constitutes a vital part of the technic.

A large number of favorable reports have appeared on the value of serobacterins in the preventive and curative treatment of such diseases as cholera, plague, typhoid fever, dysentery, streptococcic and pneumococcic infections, gonorrhea and even tuberculosis and rabies. Sensitized plague vaccine is now official in the French Pharmacopoeia, sensitized tuberculin is coming into very general use in Germany and other European countries, and sensitized rabies vaccine, on account of the rapidity and greater certainty of its action, has been adopted as the official Pasteur treatment.

The underlying principle explaining the action of serobacterins, according to Besredka, is that the bacteria prepared by sensitization are rapidly devoured by the phagocytes, and this is the cause of the absence of unfavorable reactions following their use. The combining of antibodies and bacteria outside the body dis-

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poses of a long-drawn-out preliminary process which, with the bacterial vaccines, must be done by the patient's body cells. In serobacterins, this combination of antibodies with the bacteria being already performed, their action is immediate and free from local and general reactions.

The action of serobacterins may be characterized as follows:

1. **Certain**—because the bacteria are already prepared for phagocytosis and intra-cellular digestion.
2. **Rapid**—an effective immunifying response follows the first injection in from 24 to 48 hours.
3. **Harmless**—Being saturated with antibodies, the serobacterins do not absorb any of those present in the blood of the patient, and consequently cause no opsonic or clinical negative phase. They are free from toxic action.
4. **Permanent**—Animal experiments prove that the immunity secured from the use of serobacterins or sensitized bacterial vaccines is more permanent than that following the use of bacterial vaccines.

A very complete review of this most interesting subject appears in "The Mulford Digest" for December, and we suggest that any reader who has not received a copy of the December "Digest" containing this review should secure one.

Rightly Traced.

Mrs. Tightwad (visiting at the preacher's home)—What beautiful buttons you're sewing on your husband's coat! Do you know, my husband once had some just like them?

The Preacher's Wife—Yes, we found them each Sunday in the collection bag.

Where Is Rosa?

Mr. Cyrus Green—Molly, what is that picture called in the catalog?

Mrs. Green (reading)—"Cows After Rosa Bonheur."

Mr. Green—By gosh! I see the cows but where is Rosa Bonheur?

So Has the Truth Been.

Fair Customer—I tell you that I wear a No. 2.

Clerk—But, madam, this shoe that you just took off is a No. 4.

Fair Customer—Yes, I know; but it has stretched horribly.—Boston Transcript.

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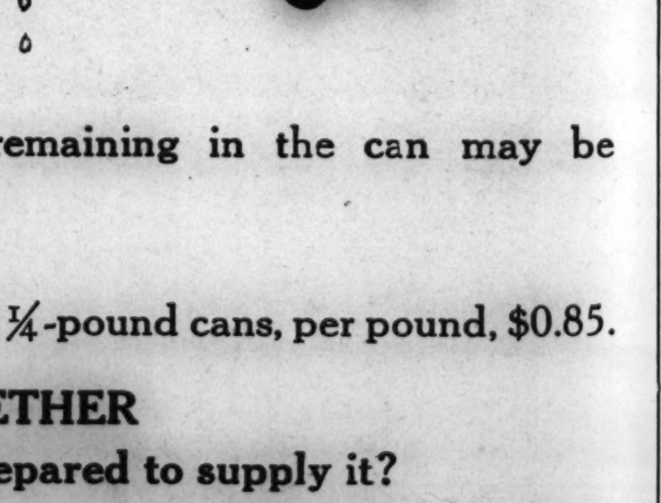

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